



FRIDAY, JULY 28, 1899.

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Contributions.

The Canda 100,000 Lbs. Car.

To the Editor of the Railroad Gazette:

Since I wrote to you before (June 9, p. 403) I have received the plans for the Canda 50-ton box car, and have looked them over carefully.

I still regard the car as a make-shift, which cannot prevail to any extent, and must fail in time. The under frame and truss are not as strong as good 34-ft., 30-ton cars, and instead of making this of proper strength and depending on it to carry the whole load, an attempt is made to stiffen the upper frame longitudinally so that it will assist.

The body bolster has the same width and depth as ordinary 30-ton cars, and has neither strength nor stiffness for the required resistance under 50-ton load.

The draft gear is built on the old lines, with wood for the main resistance, and as this was always a weak point on cars of light capacity, it will not endure under the more severe service required for the heavier lading.

The trussing of the side posts cuts out a good portion of their section, and as the sills and plates dry and shrink they will leave the truss rod nuts without a bearing, or the bulging of sides will bed the washers into the soft wood, so that the slight depth of truss will not be effective.

The end posts are not as heavy as many which have failed in 30-ton cars. In general, the attempt to make the car light has resulted in a design which is hardly adapted for cars of ordinary capacity, and I should expect it to fail under the heavier loads imposed.

A car of this capacity should have been made 10 ft. wide so as to keep the centre of gravity of the load down as low as possible. The plans show the car to be only 8 ft. 9 in. wide over side sills, and only 8 ft. 3 1/2 in. between sheathing.

I believe it will be found before very long that the severe service of a 50-ton box car will require the under frame and draft rigging to be made of steel, the same as for coal or ore cars of same capacity, and the upper frame should be stiffened, to resist bulging, by pressed steel posts, which will have a constant stiffness not depending upon truss rods.

S. M. P.

New York, July 17, 1899.

To the Editor of the Railroad Gazette:

I have read the proof of the letter signed "S. M. P.," regarding the Canda 100,000 lbs. capacity box cars, which is substantially answered by my letter addressed to you on the 11th inst.

Assuming that "S. M. P." has carefully looked over the plans, his statements must be considered remarkable. I quote from his letter: "The body bolsters have the same width and depth as ordinary 30-ton cars, and has neither strength nor stiffness for the required resistance under 50-ton load." The body bolsters used in my 50-ton capacity box car are manufactured of cast steel by the American Steel Foundry Company of St. Louis. Each bolster is subjected to a physical test under hydraulic pressure, as follows, viz.: Each is blocked up at the ends and a pressure of 50 tons is applied at the center. The deflection under this test has in no case been more than a trifle over three-sixteenths of an inch, and when the pressure was removed they have in every case resumed their normal position. This means a test equal to 100 tons per car for two bolsters, with-

out permanent set. "S. M. P." is not correct in his statement that similar body bolsters of like dimensions, etc., are used under 30-ton capacity cars.

Again quoting from his letter: "The trussing of the side posts cuts out a good portion of their section, etc." He has failed to note that the side posts can neither receive nor distribute a pound of the load; that their particular function is to resist a lateral pressure from the interior of the car; that the trussing of such posts will resist and prevent the bulging of the sides of the car from the lateral pressure of the load.

He seems also to have failed to note that all tension members in my car, as I have repeatedly stated, bear against iron and not against the side grain of the wood, and therefore the anchorage of the truss rods is secure and the washers cannot become imbedded in the wood, as he apprehends. It follows, of course, that the assembled posts, girths, lining, etc., all aid to stiffen the construction, and particularly to resist counter stresses. F. E. CANDA.

Railroad Interests in the Connecticut Legislature.

By Clarence Deming.

The session of the Connecticut Legislature just ended closes what may be called the fourth campaign of steam against trolley in the State. But it has been a campaign marked more by a readjustment and definition of interests than by the actual warfare which took place during the three preceding sessions of 1893, 1895 and 1897.

At the first of these sessions the steam interests, hardly awakened to the gravity of the general attack made by a powerful trolley combination, suffered a partial defeat. In 1895 the steam railroad companies, thoroughly aroused, won victory along the whole line.

In 1897 the steam companies struck an alliance with the "old" trolley companies, which dreaded parallels hardly less than did the steam companies themselves. But the steam companies by this time practically all merged into the New York, New Haven & Hartford (Consolidated) system, found themselves under the restraint of the popular outcry against "monopoly." The result of a long campaign, mainly defensive on the part of the steam interests, was concession at some points—where trolley parallels were allied with powerful or dangerous forces in politics—and successful resistance at most of the others. Two important parallels were allowed, four were for the time defeated. But the significant feature of the session of 1897 was the division of trolley interests into old and established companies on the one hand, as opposed, on the other, to new and often competitive trolley enterprise, in a State where legitimate and profitable trolley territory had been largely exhausted.

The Consolidated Company found awaiting it at the opening of the session of 1899, just closed, three pretty well defined groups of trolley schemes, collectively much smaller in number and extent than at any one of the three previous sessions. They were: (1) A few minor lateral trolleys, to which the steam company was friendly; (2) projected parallels, some of them serious, and most of them extensions of existing lines; and (3) a few independent and separate parallels with somewhat dangerous potency as links in future systems. But the trolley interests were, for reasons stated, not allied and the separate schemes could be taken up and defeated one by one by the great steam company; and that, in the main, has been the history of the session.

The session opened with the withdrawal by the steam company of opposition to a parallel which it had long resisted. For years both the Consolidated and Vermont Central corporations had fought in the Legislature and the courts a projected trolley about thirteen miles long between the cities of Norwich and New London, on the west side of the Thames River. The parallel had been warmly favored in both cities, the question had been taken into politics at the last election and legislators in several interested towns had been pledged—before election—to the enterprise. Among those legislators was the Speaker of the lower house, and its hardly a guess that his power in the appointment of the railroad committee of the Legislature was the influence which the steam companies deemed it unwise to resist. To that influence rather than the stated cause, the paralleling of the Vermont Central by the Groton extension of the Consolidated system on the east side of the river, is the withdrawal from the long contest by the Consolidated Company to be attributed.

Some twelve miles westward from the city of New Haven are the cities of Ansonia and Derby and the Borough of Shelton, geographically almost one municipality and containing a population of about 23,000. They are connected with New Haven by a single track steam road, the terminal link of the Berkshire division of the Consolidated Company. It has for years been a danger point for the Consolidated Company, and trolley parallels have been projected repeatedly. At the opening of the Legislative session just ended there were three such projects advertised under the Connecticut law, but all three trolley enterprises were withdrawn pretty early in

the session. Their retreat was, no doubt, due partly to their inability to reconcile their own rival interests, but there were other signs at the State Capitol that a conflict with the Consolidated Company would be very costly and disastrous to them in the end.

An interesting and curious feature of the contest, during the brief time that it proceeded, was the appearance before the legislative railroad committee of a large delegation of merchants from Ansonia and Derby to protest against trolley connection with New Haven, on the ground that the trolley would "divert local trade" to the larger city—an argument that exactly reversed itself when the project of a trolley parallel to Seymour, a few miles northward of Ansonia and Derby, came to be considered and the merchants of Seymour became the protestants. This "diversion of trade" argument has now become conventional in the trolley economics of Connecticut. It serves to beguile railroad committees at the State Capitol, especially when a great corporation presents it, and the free-pass crowds the committee room.

Though postponed to future Connecticut legislatures, the Derby-Ansonia parallel remains as a grave menace to the large passenger traffic on the steam road between those cities and New Haven, and its construction is merely a matter of time and of urban growth. Officers of the Consolidated Company admit that when the new rivalry comes it probably will have to be met by the third rail, and the history of competition of third rail and trolley between New Britain and Hartford repeat itself.

The most important steam-trolley conflict of the session came in an unexpected quarter over a project for a trolley line between Middletown and Meriden, a city in which the Consolidated Company owns the whole trolley system. The causes of the contest, save as it involved the trolley monopoly of Meriden, were not apparent at the time, nor are they apparent now. The new line, some ten miles long, would have run through a thinly settled country and connected two cities already joined by a steam road, with local traffic so insignificant that it was for some years discontinued. Nevertheless a strong fight was made for the new line and continued until near the close of the session. The promoters of the enterprise carried it through the lower house by a large majority in spite of an unfavorable committee report, but the project was voted down in the Senate and died between the two Houses. The fierce battle over a scheme on its face unimportant suggests that it was part of some larger and remote plan of trolley combination. Its defeat was the climax of a series of successes of the steam company during the session, broken only by its retreat from the Norwich-New London trolley; the Ansonia-Seymour parallel was defeated; a parallel from Milford to Derby was withdrawn, as were projected parallels of the Fair Haven and Westville Company to North Haven, Wallingford and Cheshire, and a few parallels of a minor character; nor, indeed, have many trolley projects of any kind been authorized and the few authorized have not been important.

Of general trolley legislation of the session there has been none worth comment, but the nature of attempted legislation which has failed throws light on a new and interesting situation in the State as regards street railroads. When the trolleys were first introduced some eight years ago they incurred popular dislike, which ere long changed, with improvement of the new motive power, into a veritable trolley craze reaching from the busiest city mart to the remotest farm house. It was at this period, about 1893, that a trolley saturnalia began in the State. Valuable franchises were surrendered in the cities without thought of the future, outside speculators rushed in, trolleys were built on the proceeds of bonds, while the promoter pocketed the stock. At present there are about 430 miles of trolley track in the State, including sidings. The outstanding stock of thirty operated roads is approximately \$12,000,000. The trolley systems are localized in urban and suburban towns about 50 in number out of a total of 168 towns in the State, yet the taxes on the trolleys, amounting to about \$133,000 a year, go to the State Treasury with the approval of the beneficiary rural towns, which dominate the Legislature. Under these conditions and with not a few dropical trolley companies highly prospered there has been a distinct reaction in the public sentiment against the trolley corporations. The same communities which a few years ago were eager to surrender street franchises now fret under their original errors of forecast and are seeking hard for a method of "getting even" with the trolley companies.

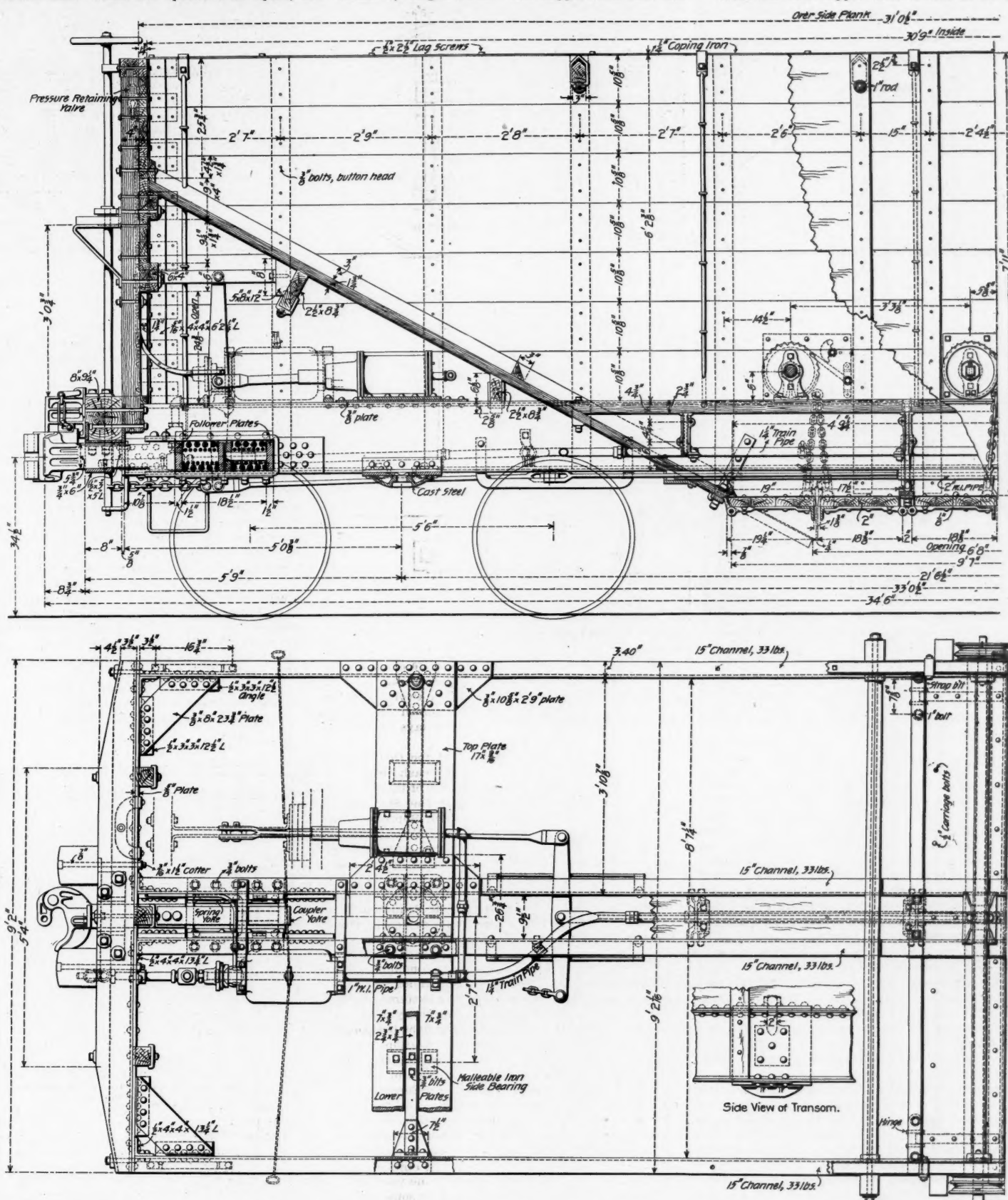
This sentiment, not unnatural, and which may have to be reckoned with in the future, expressed itself in several legislative measures at the past session. One bill provided that trolley companies must light the streets through which their lines pass—a proviso, by the way, which one municipality tried to enforce under the general street railroad law of the State as a condition of a trolley extension, but which was ruled out as "unreasonable" on appeal to the Superior Court. Another bill proposed the transfer of the State tax to the "trolley" towns, and a third was a "half fare" bill for school children and workmen in the cities of Hartford and New Haven. The first

there are $\frac{3}{4}$ x 8 in. gusset plates, at the outer corners of the frame, riveted to shelf angles. The center sills are securely tied together throughout their length by iron space blocks, which also support the airbrake train pipe and form a protection for the top rod of the foundation brakes. The tops of these sills are also connected at the transoms by wide $\frac{3}{4}$ in. cover plates, above which are the top transom plates, $\frac{3}{4}$ x 17 in., which at the ends are riveted to the tops of the side sills and the lower transom plates through $\frac{3}{4}$ in. gusset plates. There are two lower plates of each transom, $\frac{3}{4}$ x 7 in., passing beneath the center sills. These are spaced 3 in. apart, be-

The wooden hopper is of the drop bottom type, standard in the other classes of equipment on the Norfolk & Western, except that three sets of doors are used. All chains for handling the doors are on the outside, away from possibility of damage in unloading; they can be operated from either side, the chain sheaves being mounted on heavy shafts extending across the car. These shafts are protected by $2\frac{1}{2}$ in. pipes, which serve also as cross-ties for the hopper. The cross pieces to which the doors are attached also assist as bottom ties. The top ties are four 1 in. rods with wooden thrust timbers, all protected by angle irons. The hopper side and end

long bearing on the columns, and seven double coil springs are used at either end. The wheels weigh 650 lbs., and the axles are $5\frac{1}{2}$ in. in diameter at the center, with $5\frac{1}{4}$ x 9 in. journals. M. C. B. standards for a 5 x 9 in. journal are followed in the matter of journal boxes, bearings and wedge, excepting as to the diameter of the journal. As these cars will not be used in interchange, and no standards having been established for 100,000 lbs. capacity axles and journals, the Norfolk & Western has used such proportions as experience and experiment seem to justify.

With the new hopper bottom cars to be built at



Hopper Bottom Gondola Car, 100,000 Lbs. Capacity—Norfolk & Western Railway.

tween which a tension member, $\frac{3}{4}$ x $2\frac{1}{2}$ in., extends from the bottom of each side sill to the under side of the top plate near the center sills; the malleable iron side bearings are placed at the crossing of the tension members and the lower plates, and are bolted to all three, as shown in the plan of the framing. To transmit the load from the side sills to the top plate of the transom, steel castings are riveted to the webs of the channels, ending in 2 in. round sections that pass up through the transom plates and carry nuts. In this way the rivets in the end transom connections are only depended upon to resist shearing forces. The center plates are steel castings, and also act as ties for the center sills.

boards are $2\frac{1}{2}$ in. thick, and the hopper bottoms are $1\frac{1}{4}$ in. oak. The side stakes are proportioned to prevent bulging, and are well secured to the sills and hopper sides, as shown. The draft gear acts directly on the center sills, tandem springs being used, and so arranged that both springs act together under forces in either direction.

The details of the diamond frame truck used with these cars are shown by the engravings. The wheel base is 5 ft. 6 in., the upper and lower arch bars are $1\frac{1}{2}$ x $4\frac{1}{2}$ in., and the tie bar $\frac{1}{2}$ x $4\frac{1}{2}$ in. steel, while the truck bolster consists of two 10 in., 35 lbs. steel I beams, with iron space blocks between. The spring plank is a 12 in., 30 lbs. channel, with an unusually

Roanoke, Westinghouse air brakes and steel brake-beams designed by the Norfolk & Western will be used, and equal numbers of Chicago, Tower, Buckeye and Hein couplers will be used, in order to test the different makes for this class of service.

Central Association of Railroad Officers.

At the meeting of this Association in St. Louis, July 18, Mr. W. J. Murphy, Superintendent of the Cincinnati Division of the Cincinnati, New Orleans & Texas Pacific, read a paper describing the use of the electric train staff on his road near Cincinnati. He uses the divided staff, one half being given to

the engineman and the other half to the conductor. The two staff pillars which control a block section have 31 staffs altogether, one of which is a permissive staff containing a key which opens a box of six tablets. The permissive arrangement is never used for passenger trains and never for any train without a special order from the Superintendent. The semaphore by which trains are admitted to the section of road controlled by the staff is locked and unlocked by the staff, and after the signal is unlocked and set in the all clear position the operator is unable to work the electric bell, by which he notifies the next station that a train is proceeding, until the signal has been restored to the stop position.

Mr. Murphy has a special form of dispatchers' order, to be used in case of the failure of the staff apparatus. This is similar to the usual "31" order, except that a part of the body of the order is printed, as follows:

"Electric train staff apparatus having failed between South Ludlow and Kenton Heights, train.....after arrival of train.....at.....is authorized to proceed to.....with right of track over all other trains. Report arrival promptly."

Mr. Murphy also read a paper on the use of the stereopticon in teaching trainmen the use and indications of fixed signals. As is well-known by all railroad officers who have catechised trainmen, it is often difficult by interrogatories to reach a satisfactory conclusion as to whether a brakeman, for instance, actually possesses as thorough a knowledge of the signals as his answers might seem to indicate. Mr. Murphy, after experiencing various difficulties in this direction, hit upon the plan of using the stereopticon, with which he shows on a large screen pictures of yards with signals, the blades and lights being colored; and by this he succeeds, with a decided saving in time, in determining without question whether or not a man under examination actually has made himself familiar with all the subjects on which he is questioned. By the use of the pictures it is possible to make the person who is being examined do the talking, and there can be no question as to the thoroughness of the instruction.

Mr. Murphy remarks, incidentally, that he has put electric lights in the classification signals on the front ends of his passenger locomotives. A few months ago the classification lights on an important passenger train went out, one night, just before the train met a freight which would have run into danger if the signal had failed. The failure of the light was almost immediately discovered and no trouble ensued; but, the locomotives being already equipped with electric headlights, it was decided to use electricity in the small lamps of all passenger engines. The circuit is extended to all the lights on the engine, including the gage light. The small lamps being arranged in series, if one of them goes out, all the rest die at the same time, thus giving notice to the engineman.

The M. C. B. Coupler on German Railroad Cars.

The prospects for introducing the M. C. B. coupler in England as well as on the European continent have been noted from time to time in these columns. While it seems probable that its progress in England may be temporarily blocked, the matter has been under advisement for some time in Germany in a promising manner. In the February and April numbers of the American Engineer and Railroad Journal, Mr. E. Grafstrom, who recently returned from a trip through that country, described his observations on the coupler question there, and referred to a draft rigging brought out by the Nessel-dorf Car Co. of Germany.

In this number we illustrate a similar arrangement selected by the management of the Bavarian State Railways for conducting experiments with the M. C. B. coupler. In the current number of the "Organ," Mr. Zehnder, Mechanical State Railway Engineer at Munich, describes this draft rigging as follows:

In order to make it possible to couple on to other cars equipped with the prevailing screw couplers, the present standard hook and the side buffers have been retained. The automatic coupler is underneath this hook, as shown in Fig. 1, and projects so far that the buffers stand $\frac{3}{4}$ in. apart when coupled up, as in Fig. 2. The draft sills consist of channels, Fig. 3, bolted to the car frame, and further re-enforced by means of angles and gusset plates. The draft rigging otherwise corresponds to the M. C. B. recommended practice, but the coupler itself is longer in the shank, and the center buffer on the coupler head has been removed. The locking device selected is an exact counterpart of the Janney, but the knuckle is fixed to the pivot pin, and the lower end of the latter is provided with a spiral spring, by the aid of which the knuckle is thrown open automatically when the locking pin is raised. The coupler is made of cast steel. The draft spring is of 22,040 lbs. capacity, and is put in under a compression of 2,200 lbs. With full load the spring is compressed $\frac{2}{3}$ in.

On December 7 last year, a number of official tests were made in the Potsdam yards at Berlin with five passenger and ten freight cars equipped with this arrangement, which apparently proved entirely satisfactory to the committee of railroad officials having the matter in charge.

At the last meeting of the German Railroad Association it was decided, however, that the committee should continue its experiments, principally for the purpose of ascertaining whether the M. C. B. contour lines were the most suitable, or not, for German conditions. It was the sense of the meeting that the present hook coupling had reached its maximum dimensions and could not be further increased in size, in proportion to the increased weight of cars, without making it too heavy for the men to handle. It was further agreed that the additional weight of American couplers, although objectionable, was no serious obstacle.

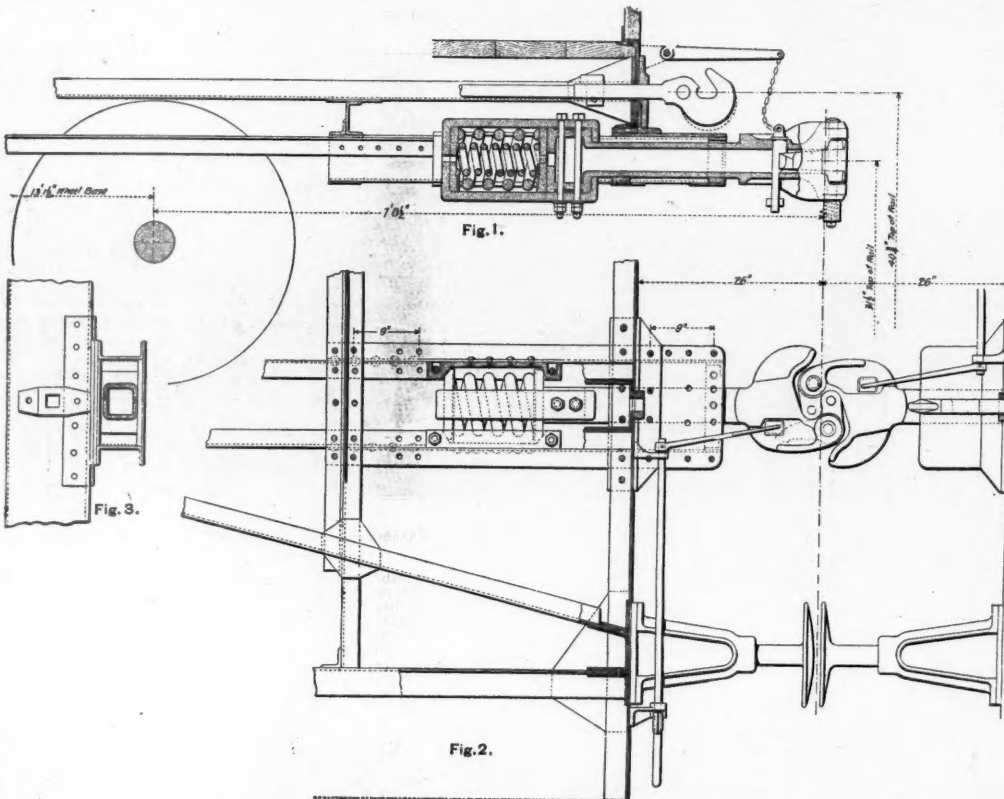
The Telephone in Railroad Service.

The telephone has been found valuable even in the limited way in which it has been used for railroad purposes. It is the belief of the writer that it can be made of greater service with a corresponding gain in its value and efficiency, and a great saving of time. He does not know of an actual installation of telephones where there has been a systematic, comprehensive plan worked out beforehand for the general use of this instrument with proper safeguards and precautions against errors and neglects. In sending messages by telephone, there is no record of the actual message sent over the line, or of what it was understood to mean at the receiving end. In the case of telegraphic messages there may be an automatic record of the message actually sent for comparison and verification with the original at any subsequent time thereafter, but in the case of the telephone, the message as it is understood may be very different from what was intended, and there is usually no way of fixing the blame for the error beyond a reasonable doubt.

of the same errors may occur, or others peculiar to the use of this instrument, but in spite of all the objections that are brought against it, the telephone is coming more and more into use for railroad purposes and with increased favor. Such improvements have been made in the instruments, in the methods of using them and in the better education of operators, railroad officials and the public generally as to the proper ways of using the telephone, that for many purposes it is now as reliable in every way as any of the means previously in general use. With the use of safeguards, which are now well known and of others which may be devised to meet the needs of each particular situation, transmission by telephone can be as safely done as it is to-day by the telegraph. The writer has made some study of this matter, and will give here his conclusions, in the hope that they may be freely discussed, the errors pointed out if they exist, and a better way discovered.

The proper procedure for sending important railroad messages by telephone would, he thinks, be in accordance with the following requirements:

(1) All messages should be first written or copied out in full in a book kept solely for that purpose (as is now done in most cases with train despatcher's orders sent by telegraph), and this should be done, whether the message is to be sent by the official himself or by an operator. While he is not quite certain what will be found the best practice, yet the writer believes that all train orders should be telephoned, whenever it can be done, by an operator specially trained for that business, but a typewriter or clerk may also profitably be employed to write out from dictation all such messages. As a typewriter can not well be used for records in a book, the messages may be written on sheets of proper size and



The M. C. B. Coupler on German Railroad Cars.

It is probably this fact more than anything else which has made railroad managers so conservative about the use of the telephone for any except unimportant matters. A proposition to use the telephone for the transmission of train orders which are now sent by telegraph would not be seriously considered. Yet it can be so used with as great a degree of safety as is now experienced in the transmission by telegraph, and with a great saving of time.

It is not in the transaction of ordinary business about which there is no urgent haste and no particular risk that the telegraph is most important; it is in cases where life and death are at stake; where minutes or even seconds are of priceless value; where the delay of an instant may determine the fate of a hundred people or many thousands of dollars worth of property. Under precisely the same circumstances the telephone would be as much superior to the telegraph as the latter is to a letter sent by messenger. With the telegraph time is consumed in getting communication with the person to whom it is desired to send a message; time is required to transmit the words or characters of the message; more time is taken up in preparing it for the person to whom it is to be delivered; still another loss is occasioned by the delay or failure of this latter person to understand what the message required, or to act upon it when it is understood. There is a chance for error in each of these transmitting or receiving parties, and in the copying or delivery of the message, when it is not received directly by the person to whom it is addressed.

In the transmission of messages by telephone some

past or otherwise fastened into the book; or they may be written in a manifold book, and a copy given to the operator for transmission. When practicable, such messages should be received by the operator at the station to which they are addressed and written in a book used only for messages received. If the person for whom the message is intended is not present in person, the operator should write as many manifold copies as may be needed at the same time as the original is written. The person or persons who are to receive the order, before attempting to carry it out should be brought to the telephone and report to the Train Despatcher the message as they have received it. If this can not be done at once then the receiving operator should read the copy he has made, verbatim to the sending operator, who should make the proper record, and the repetition by the persons who are to act upon the order should be made when they have arrived. The writer thinks this repetition should be made to the Train Despatcher in person, and not to the operator, because if done in this way it will serve as a check upon the correctness of both the transmission and the receipt by the operators, and there will be a much reduced liability to error. The writer is clear in his own mind that in some way the official who issues the order and the person who receives it and is to act upon it, should be brought into communication with each other before the final word is given.

The following steps would then be necessary in the regular transmission of train orders or other important messages:

(1) The message should be written by the Train Despatcher or at his dictation in a book kept for that purpose.

(2) It is to be transmitted by the regular operator and recorded in a book by the operator who receives it, making at the same time as many manifold copies as may be necessary for the different persons who are to act upon the order.

(3) The reading by the receiving operator to the sending operator of the copy he has written down. If this is found correct, then

(4) The repetition by the conductor and engineer of each train which the order concerns directly to the Train Despatcher, of the message they have received, or of their understanding of what they are called upon to do.

The telephone over which this is done should be in a closed room or cabinet to which but one man is admitted at a time, in order that there may be no mere repetition by one man of what he has heard another say just a moment before.

(5) A record of the correct transmission and understanding of the order by all the men whom it concerns.

(6) The certification by the Train Despatcher of the correct understanding of the message and the O. K. sign for the carrying out of the order.

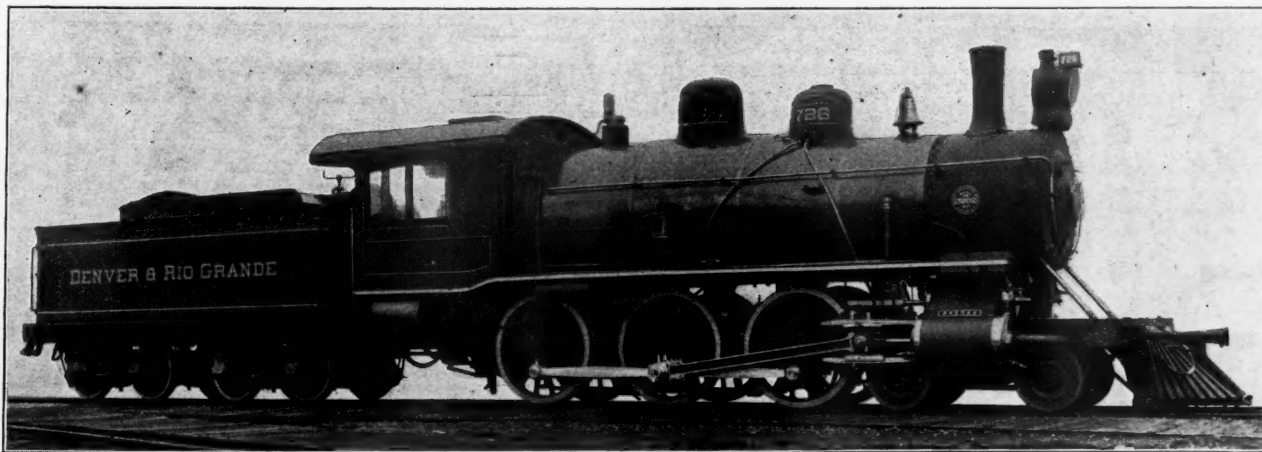
The operator for sending train orders by telephone should be clear headed, intelligent, thoroughly familiar with the working of the telephone in all circumstances, well versed in the use of expedients for supplementing or counteracting defective working at times when normal conditions do not exist. The transmission of important messages should by no means be intrusted to persons who have not been specially trained as telephone operators, except in emergency or for a temporary makeshift.

With precautions like the above or such others as

Weight on drivers.....	124,000 lbs.
" truck wheels.....	36,000 lbs.
" total.....	160,000 lbs.
" tender loaded.....	112,000 lbs.
Wheel base, total, of engine.....	23 ft. 7 in.
" driving.....	12 ft. 0 in.
" total, engine and tender.....	53 ft. 10 1/2 in.
Length over all, engine.....	39 ft. 11 1/2 in.
" total, engine and tender.....	65 ft. 10 1/2 in.
Height, center of boiler above rails.....	8 ft. 6 in.
" of stack.....	14 ft. 11 1/2 in.
Heating surface, firebox.....	165 sq. ft.
" tubes.....	2,257 sq. ft.
" total.....	2,422 sq. ft.
Grate area.....	33.5 sq. ft.
Drivers, diameter.....	63 in.
" material of centers.....	Cast steel
Truck wheels, diameter.....	33 in.
Journals, driving axle, size.....	5 x 12 in.
" truck.....	5 1/4 x 12 in.
Main crank pin, size.....	6 1/4 x 6 1/2 in.
Cylinders, diameter.....	21 in.
Piston stroke.....	26 in.
" rod, diameter.....	3 1/2 in.
Kind of piston rod packing.....	Metallic
Main rod, length center to center.....	9 ft. 7 in.
Steam ports, length.....	2 1/2 in.
" width.....	2 in.
Exhaust ports, least area.....	50 sq. in.
Bridge, width.....	3 1/2 in.
Valves, kind of.....	Piston
" greatest travel.....	6 1/4 in.
" steam lap (inside).....	1 1/4 in.
" exhaust lap or clearance (outside).....	0 in.
" lead in full gear, negative.....	1/4 in.
Boiler, type of.....	Extended wagon top
" working steam pressure.....	210 lbs.
" material in barrel.....	Steel
" thickness of material in barrel.....	3/4 in.
" diameter of barrel.....	63 in.
Seams, kind of horizontal.....	Sextuple riveted
" circumferential.....	Double riveted
Thickness of tube sheets.....	front, 5/8 in., back 1/2 in.
" crown sheet.....	5/8 in.
Crown sheet, stayed with.....	Radial stays
Dome, diameter.....	32 in.
Firebox, length.....	10 ft. 1 in.
" width, front.....	3 ft. 5 in.
" depth, back.....	29 in.
" material.....	Steel
" thickness of sheets.....	5/8 in.
" brick arch.....	No
" water space, width, front, 4 1/2 in.,	sides 4 in., back, 4 in.
Grate, kind of.....	Cast iron rocking

is, 1 1/2 miles from the present end at Liverpool Street. It only extended to Romford, in Essex, about 10 1/2 miles. As usual, the public opening was preceded by a formal ceremony shortly before, and June 18 being Waterloo Day, was thought suitable for a line which was expected to reach Harwich, the port whence most of Wellington's troops sailed in 1815. The temporary station being in a densely crowded poor quarter of the East of London, large crowds assembled to see the two trains start, one on each line [track] about 1.45 P. M. These consisted of 11 or 12 coaches apiece, and had an engine at each end, a practice long followed occasionally by most British railways. They proceeded abreast to Romford, stopping to inspect the only two intermediate stations then built, at Stratford and Ilford.

Romford was reached about 3 o'clock, where a dinner took place in a field and general rejoicings marked the whole proceedings. A band of music was in the front carriage of each train, according to a common custom at the early railway inaugurations, and the Persian Ambassador, in gorgeous native dress added considerably to the brilliant scene. The service of trains put on June 20, 1839, comprised seven each way on week days and six on Sundays; half an hour being the time allotted. Contrary to the general practice, the Eastern Counties ran third-class coaches from the very first, though not of a type which would be much appreciated now. They were mere "truck platforms," with eight transverse seats holding five people apiece. No roof or shelter was dreamed of; nor was it then compulsory to run any thirds at all. The second-class had roofs, certainly, but only half-doors, the upper part of the sides being open. In the first-class nearly as much comfort, though less space, prevailed as there is now. The vehicles were built in London by a Mr. Wright, were painted a transparent blue and car-



Ten-Wheel Passenger Locomotive for the Denver & Rio Grande.

are adapted to the needs of each particular case, the writer believes that train despatching can be as safely done with the telephone as with the telegraph, and with much less time and trouble, and it is his expectation that it will gradually come into use more and more for this purpose.

[At the time the above article was written the author did not know of a single instance where orders had been regularly transmitted by telephone, but he has since learned of two or three cases where it has been so used with excellent results, but he believes without some of the safeguards he has mentioned, and which he considers essential. He would not feel safe in recommending its use except when all possible precautions against error or misunderstanding have been taken.]

GEO. W. BLODGETT.

Boston, May, 1899.

Ten-Wheel Passenger Locomotives for the Denver & Rio Grande R. R.

The Brooks Locomotive Works have recently built ten heavy ten-wheel passenger locomotives for the Denver & Rio Grande, the general appearance of which is shown by the accompanying engraving. These engines weigh in working order 160,000 lbs., of which 124,000 lbs. are on the driving wheels. The cylinders are 21x26 in., the driving wheels 63 in. in diameter, and the working steam pressure 210 lbs.; unusually high for a simple engine. As shown the boiler is of the radial stay, extended wagon top type, and the firebox is above the frames. The heating surface of the firebox is 165 sq. ft., that of the tubes 2,257 sq. ft., making a total of 2,422 sq. ft.; the grate has an area of 33.5 sq. ft. Ten-inch piston valves are used.

The special equipment includes New York driver and engine truck brakes, Westinghouse tender brakes, Nathan lubricators, Kunkle safety valves, and A. French springs. The injectors are part Hancock and part Nathan and some of the engines have U. S. metallic packing and some Sullivan packing.

The principal dimensions are as follows:

Name of operating road.....	Denver & Rio Grande
Gage.....	4 ft. 8 1/2 in.
Kind of fuel to be used.....	Bituminous coal

Tubes, number of.....	326
" material.....	Charcoal iron
" outside diameter.....	2 in.
" length over sheets.....	13 ft. 3 1/2 in.
Smokebox, diameter.....	63 in.
" length.....	61 in.
Exhaust nozzle.....	Single
" diameter.....	5 1/4 in.
" distance of tip below center of boiler.....	6 1/4 in.
Netting.....	Wire
" size of mesh.....	2 1/2 x 2 1/2 in.
Stack.....	Taper
" least diameter.....	14 1/2 in.
" greatest diameter.....	17 1/2 in.
" height above smokebox.....	3 ft. 7 in.
Tender.	
Type.....	Eight-wheel, steel frame
Tank capacity for water.....	5,500 gals.
Coal capacity.....	8 tons
Kind of material in tank.....	Steel
Thickness of tank sheets.....	1/4 and 1/2 in.
Type of under-frame.....	Steel channel
Diameter of truck wheels.....	38 in.
Diameter and length of axle journals.....	5 x 9 in.
Distance between centers of journals.....	5 ft. 0 in.
Diameter of wheel fit on axle.....	6 in.
Diameter of center of axle.....	5 1/2 in.
Length of tender frame over bumpers.....	23 ft. 5 1/2 in.
Length of tank.....	21 ft. 8 in.
Width of tank.....	9 ft. 0 in.
Height of tank, not including collar.....	4 ft. 9 1/2 in.

Diamond Jubilee of the Great Eastern Railway.

By W. B. Paley.

Although not much used by them, the Great Eastern Railway is known to most Americans who have made any stay in England as comprising the cathedral towns of Ely, Peterborough and Norwich, and the University of Cambridge within its network. To-day is the 60th anniversary of the opening to public traffic of the first small portion of this line, now the sixth in Great Britain in point of length.

Railways in East Anglia had been talked of as early as 1802, but the Eastern Counties Railway, progenitor of the Great Eastern, was not advertised until October 25, 1834. On July 4, 1836, it obtained an act to make a line from London to Norwich and Yarmouth by Colchester and Ipswich, but so utterly at sea were the promoters as to cost that the sum they named hardly sufficed to take them half way.

The first bit of line opened 60 years ago was from a temporary terminus where Globe Road Station now

ried the coats of arms of the largest towns the line was intended to reach. Like the London & Birmingham, the E. C. R. preferred 4-wheeled engines, its stock shortly after commencing work consisting of 12 single-driver passenger and two coupled goods engines. The former had, some 12 in., others 13 in. cylinders, 6 ft. drivers and 4 1/2 ft. leading wheels. The 13 in. engines had 94 tubes 1 1/2 in. in diameter, giving 409.46 sq. ft. of heating surface, whilst fireboxes were 41 x 39 x 56 ft., equal to 70.34 sq. ft., or 517.66 ft. in all. Not reckoning the tenders, the engines cost £1,300 apiece; they were all built in London by the long-extinct firm of Braithwaite & Milner, whose works were a little west of the top end of Tottenham Court Road. Inside bearings and inside cylinders were, as in Bury's 4-wheeled engines, a feature of these machines, but they were larger and heavier than his and unlike them in many details. Messrs. Braithwaite & Milner sent a good many engines to America in the early days, and three to the Greenwich Railway, the passing of these locomotives through the streets being a matter of great popular interest.

Mr. John Braithwaite, of this firm, was engineer to the Eastern Counties Company and laid it out on the 5 ft. gage. Naturally the Northern & Eastern Railway, a line branching from the E. C. R. at Stratford and which never got further than Bishop's Stortford on its way to Cambridge, was 5 ft., too, but both were changed about September, 1844, under Robert Stephenson's advice, before much harm was done.

The Eastern Counties got to its proper London terminus in 1840, the extension of 1 1/4 miles being all viaduct. That station, at first called Shoreditch and later on Bishopsgate, has long disappeared and been replaced by the chief London goods depot, also called Bishopsgate. It was in 1875 that the Great Eastern came on to Liverpool Street, only 600 or 700 yards, at prodigious expense; but it was the beginning of its

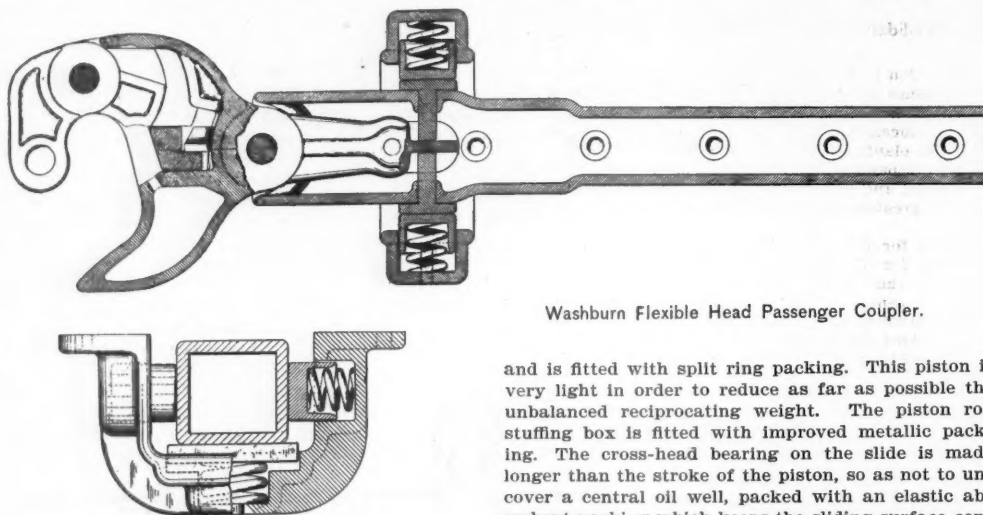
present moderate prosperity. Previously its career was one of hopeless misfortune, bad management, high fares, wretched service and semi-bankruptcy. George Hudson, the celebrated "railway king," tried to pull it round, about 1845-49, but only succeeded in ruining it and himself too, whilst the present Prime Minister, who was its Chairman 30 years ago, gave it up as a bad job. In 1862 a series of amalgamations was carried out, resulting in the present title, and an absolute monopoly of the large counties of Norfolk, Suffolk and Essex, with most of Cambridgeshire and Hertfordshire, but it got on no better till the extension into the City of London and, above all, new management, gave it a fresh start. Since then it has been a steadily improving property and would have been more so but for the unfortunate condition of English agriculture. For energy in developing new sources of traffic in a thinly populated and not very promising district, the Great Eastern is without a rival in the country. At present it works about 1,200 miles of line, with upwards of 1,000 engines, 4,700 coaching vehicles and 21,000 goods trucks, the staff numbering 30,000 men and the capital equalling over 56 millions sterling. The locomotive, carriage and wagon works are at Stratford, about four miles from Liverpool Street terminus. Its Harwich route to the Continent is extremely popular and admirably managed, and if farming could be put on its legs again the Great Eastern would soon be one of our best paying lines.

Chealsea, London, S. W., June 20, 1899.

The Washburn Flexible Head Passenger Coupler.

The Washburn Coupler Company, Minneapolis, Minn., has brought out a coupler having a flexible head for passenger cars. This was exhibited at the Old Point Comfort Conventions. It is designed so that on curves the line of contact of two couplers will be over the center of the track, thus reducing flange friction; the movable head also facilitates coupling and uncoupling on curves.

It will be seen that the head is pivoted while the rear end projects back within the coupler shank and is acted on at the sides by thimbles and springs. This arrangement permits the head to move in either direction, but centers the head whenever the side pressure is removed. As shown in the cross-sectional view a spring and plate are also put beneath the



Washburn Flexible Head Passenger Coupler.

coupler shank with a view to improving the riding of cars on rough track by providing some vertical play. We are informed that service tests with cars equipped with the new couplers show that the cars ride easier, can be coupled and uncoupled on sharp curves and that the wheel flanges do not bear against the rails, as with rigid stem couplers.

The Gilman-Brown Emergency Knuckle.

The accompanying engraving shows the Gilman-Brown emergency knuckle, which is sold by the Railway Appliances Company, Old Colony Building, Chicago, a new company which has recently been organized by Mr. George H. Sargent. This knuckle is made of cast steel and is intended to be carried in the way cars of freight trains for use when the regular knuckles of M. C. B. couplers break on the road. When this is done and breakages occur, it will be necessary merely to remove the pin, the broken knuckle, and in some cases the locking parts, and substitute the emergency knuckle, which is interchangeable with practically all M. C. B. couplers used to any extent. It will be seen that the tail of the new knuckle is so formed that it enters the coupler shank and holds the emergency knuckle in the closed position.

When knuckles break on the road, it is usual to remove the knuckle and connect the coupler heads with a link and pin. This often results in bent knuckle pins and damaged coupler lugs. Also, in the absence of link and pins, couplers are often chained together. To avoid these practices some

roads have adopted the plan of carrying an assortment of knuckles in the way car to replace breakages, but as there are so many different couplers, the knuckles of which are not interchangeable, this necessitates carrying a large stock. The emergency knuckle is designed to simplify the matter of knuckle breakages and provide a convenient substi-



The Gilman-Brown Emergency Knuckle.

tute with which the car can be hauled to the next repair point. We believe it is already in use on several roads.

Some Features of the Hunt Engines.

The C. W. Hunt Company has added a new shop about 150 x 40 ft. to its plant at West Brighton, Staten Island. The machines in the new building are run by electric motors and gradually the belts in the old buildings are being taken out and electric motors installed.

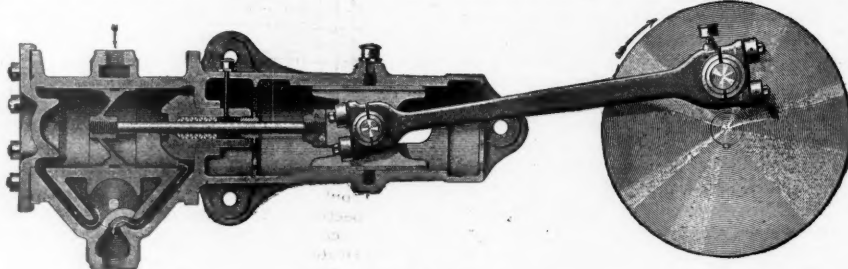
The work of the Hunt Company consists largely in making heavy duty and continuous service engines, in which they hold to certain distinctive principles in design. The engraving shows some of the special features of these engines.

The steam and exhaust pipes all drain continuously downward, the steam entering at the top of the cylinder and the exhaust passing out at the bottom, thus allowing no water to accumulate in the cylinder and cause trouble or danger when starting.

The piston has an unusually long bearing surface

and is fitted with split ring packing. This piston is very light in order to reduce as far as possible the unbalanced reciprocating weight. The piston rod stuffing box is fitted with improved metallic packing. The cross-head bearing on the slide is made longer than the stroke of the piston, so as not to uncover a central oil well, packed with an elastic absorbent packing which keeps the sliding surface constantly oiled. This bearing area is about four times as large as commonly used. The center of the bearing on the slide is directly under the cross-head pin, thus preventing a bending moment on the piston rod.

The crank pins are of special design and extra large, exceeding the proportions generally used in locomotive practice. The length of the bearing on the pin has also been increased, making the pressure on the bearing surface per square inch as little



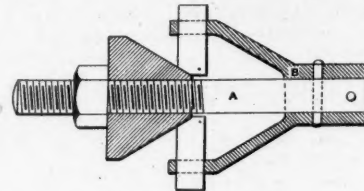
Section Through Hunt Engine.

as possible. The purpose of this construction is to reduce the wear, prevent heating under heavy service and obviate the necessity of frequent adjustment.

Among other work recently undertaken by the company are four coaling stations for the Boston & Albany, situated at Alston, Boston, East Albany and West Springfield.

A Universal Mandrel.

On a recent visit to the works of the Rogers Locomotive Co., Paterson, the writer noticed a very simple and ingenious device, shown by the drawing. The spindle, A, which has a thread turned on it as shown, is secured to the casting, B, by two dowel pins. Six slots are cut in the casting, into which the jaws are fitted, all being of equal length. A cone is made with a taper to correspond to that of the in-



A Universal Mandrel.

side of the casting. A hole is then drilled in the cone of the same diameter as that of the spindle, on which it is made to slide freely. A nut is run up on the spindle, which forces the cone on the jaws, which in turn spread out and hold securely the casting that is to be turned.

This device was designed chiefly for turning packing rings and was found to be very useful, as it can be so readily adjusted to the many different sizes. Small split pins are placed in the jaws to prevent them from falling out when not in use. R. C. D.

Moving a Drawbridge.

Last Sunday an important piece of work was done on the Passaic River draw of the Pennsylvania Railroad at Newark, N. J. For the following particulars we are indebted to Mr. S. P. Mitchell, Manager of the Edge Moor Bridge Works.

The old span, which was built in 1869, weighs 400 tons and was too light for the increasing weights of the rolling stock. The length is 250 ft. with three trusses, 20 ft. deep and 15 ft. 8 in. wide center to center.

The new draw span has center bearings, is 213 ft. 4 in. long. It has two trusses 34 ft. deep at the center and 28 ft. deep at the ends and 31 ft. wide center to center. The weight of this span is 600 tons.

It was necessary to remove the old span and put the new one in its place with the least possible interference with traffic. The method of erection was designed by Mr. S. P. Mitchell and the work was carried out under his and Mr. H. F. Lofland's direction. The new span was designed by Mr. William A. Pratt, Engineer of Bridges of the Pennsylvania RR., and Mr. W. B. Fortune was the foreman in charge of the work.

The fenders of the old bridge, extending 125 ft. each side of the center line, were extended up and down the river 210 ft. and on the false work on the south side the new span was erected. This left the old draw free to move during the period of construction, which was about eight weeks from the time the false work was begun. Car tracks were put down over the entire length of the false work except for the short distance near the center of the old span, which was in daily use. Under the new span, car trucks were placed and when the span was completed it was lowered on these trucks. On Sunday the old draw was swung around in a north and south position in line with the new span. It was then jacked up nine inches and rails were laid connecting the rails previously laid on the false work either side of the center of the pier. The old span was then mounted on eight car trucks and the new span on sixteen trucks. The old and new spans were then fastened together, end to end. Two engines at the north end of the false work, which worked four sets of four sheave blocks (two sets to each engine), were started and both spans were drawn northward in eight minutes, after which the new span was lowered on the center bearings. The entire time required from the

time of jacking up until the new draw was turned was about eight hours. During this time the trains ran over the Center street bridge north of the present structure.

The time for the different operations was as follows: The draw was turned over to the bridge company at 10:37. From this time to 11:45 was taken in jacking up. From 11:45 to 12:59 the tracks were laid

across the center pier. At 12:59 the engines began pulling, and at 1:07 the new bridge was in its proper place, during which time it had been moved 225 ft. It was then lowered into place, 10 inches, and the machinery adjusted. At 5:25 the draw was turned.

Schenectady Consolidation Locomotives for the D. & H.

In the accompanying engraving is shown one of the 15 consolidation engines built by the Schenectady Locomotive Works for freight service on the lines of the Delaware & Hudson Canal Company. Ten of these are now running and giving satisfactory service. They weigh, complete, 153,000 lbs., have cylinders 21 in. x 26 in. and the working steam pressure is 180 lbs. The descriptive specifications are as follows:

Schenectady Consolidation for the D. & H. Canal Co.	
Gage	4 ft. 8½ in.
Fuel	Fine anthracite coal
Weight in working order	153,000 lbs.
" on drivers	133,000 lbs.
Wheel base, driving	16 ft. 0 in.
" " rigid	16 ft. 0 in.
" " total	24 ft. 2 in.
Cylinders.	
Diam. of cylinders	21 in.
Stroke of piston	26 in.



Schenectady Consolidation for the Delaware & Hudson Canal Co.

Horizontal thickness of piston	5 in.
Gage of piston rod	3½ in.
Kind " " packing	Cast iron
" " " rod packing	Jerome
Size of steam ports	18 in. x 1¼ in.
" " exhaust	18 in. x 2¼ in.
" " bridges	1½ in.

Valves.

Kind of slide valves	Richardson
Greatest travel of slide valves	5½ in.
Outside lap	¾ in.
Inside " "	0 in. line and line
Lead of valves in full gear	0 in. line and line
Kind of valve stem packing	Jerome

Wheels, Etc.

Diam. of driving wheels outside of tire	56 in.
Mat'l " " centers	Cast steel
Tire held by	Shrinkage
Driving box material	Cast steel
Diam. and length of driving journals	8½ in. dia. x 10 in.
" " " main crank pin journals	6½ in. dia. x 6 in.
" " " side rod crank pin journals, main	side 7 in. x 5¼ in., F. & B. 5 in. x 3½ in.
Engine truck, kind	2-wheel swing bolster
" " journals	6 in. dia. x 10 in.
Diam. of engine truck wheels	30 in.
Kind " " "	Steel tired spoke

Boiler.

Style	Straight with wide firebox
Outside diam. of first ring	66½ in.
Working pressure	180 lbs.
Mat'l of barrel and outside of firebox	Carbon steel
Thickness of plates in barrel and outside of firebox	¾ in., 1½ in., ½ in., 1½ in.

Horizontal seams...Butt joint

sixtuple riveted with welt strip inside and outside	
Circumferential seams	Double riveted
Firebox, length	120 in.
" " width	102 in.
" " depth, ins.	53½ B., 63 F.
" " material	Carbon steel
plates, thickness	sides ¾ in., back ¾ in., crown ¾ in., tube sheet ¾ in.

" " water space	3½ in. front, 3 in. sides, 3½ in. back
" " crown staying	Radial stays 1½ in. diam.
" " staybolts	¾ in., 1 in. diam.

Tubes, material	Charcoal iron No. 12 B. W. G.
" " number of	2 in.
" " diam.	2 in.
" " length over tube sheets	14 ft. 0 in.

Heating surface, tubes	2,257.98 sq. ft.
" " water tubes	104.72 sq. ft.
" " firebox	201.67 sq. ft.
" " total	2,564.37 sq. ft.

Grate	30.05 sq. ft.
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style	Water tubes, dead bars and drop bars
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Ash pan,	Hopper dampers front and back
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Exhaust pipes	Double high
---------------	-------------

nozzles	¾ in., 3¼ in., 3¼ in., 3¼ in.
---------	-------------------------------

Smoke stack, inside diameter	16 in.
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" " top above rail	14 ft. 11½ in.
--------------------	----------------

Boiler supplied by	2 injectors, N. & Co. Monitor,
--------------------	--------------------------------

	D. & H. style, No. 10, both R. S.
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Tender.	
---------	--

Wheels, number of	8
-------------------	---

" " diam.	33 in.
-----------	--------

Journals " and length	5 in. dia. x 9 in.
-----------------------	--------------------

Wheel base	15 ft. 8 in.
------------	--------------

Tender frame	10 in. steel channels
--------------	-----------------------

" " trucks	2 trucks 4 wheel, channel iron,
------------	---------------------------------

" " cen. bearing F. & B., side bearings on both trucks	
--	--

Water capacity	5,000 U. S. gallons
----------------	---------------------

Coal	7 tons
------	--------

Total wheel base of engine and tender	50 ft. 10½ in.
---------------------------------------	----------------

Engine equipped with American outside equalization	
--	--

brakes on all drivers, worked by air; Westinghouse	
--	--

automatic air brake on tender and for train; 9½ in.	
---	--

air pump; two Crosby 3-in. muffled safety valves; Star	
--	--

6 in. chime whistle No. 3.	
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Mechanical Draft for Steam Boilers.

We have received a copy of a pamphlet containing a lecture reprinted from the Columbia Engineer on "The Influence of Mechanical Draft Upon the Ultimate Efficiency of Steam Boilers," by Mr. Walter B. Snow, of the B. F. Sturtevant Co. Mr. Snow's lecture presents the desirable features and the economy of mechanical draft, and for a condensed, readable argument, is the best we have seen.

Those who have looked over the pages of Electric Railroad Information, printed by the Railroad Gazette in connection with the second quarterly publication of the Electric Railroad List, may be familiar with Mr. Snow's discussion in this lecture, the substance of which was first printed among the technical notes in the List. The following is from the lecture:

In the accompanying curves (Fig. 1) are given the relative costs of chimney and of equivalent mechanical draft equipments in nine representative boiler plants widely different in character and rated capacity. In certain of these the cost of the existing chimney is known and that of the complete mechanical draft plant is estimated, while in others the cost of the mechanical

charges the gases just above the boiler house roof. All of the room necessary for the chimney is saved, and no valuable space is required for the fans.

The Staffordshire (Eng.) Electric Roads.

In the Railroad Gazette, April 21 last, were given a map and a few notes of the electric trolley lines, 33 miles in length, being built in Staffordshire by the Potteries Electric Traction Co. The first ten miles began running on May 18, and on that day the steam cars were in service for the last time. About a year ago the expense per mile run of the steam cars was 9.04d, and the traffic receipts 14.75d. It will be interesting to watch how these figures are altered with electrical working.

The power station is situated in Stoke-on-Trent, where the original tramway depot stood. In one direction the lines run to Longton, and the other to Burnstern.

The equipment of the power house is as follows: Three Lancashire boilers 30 ft. x 7 ft., with a working pressure of 120 lbs., give 350 h.p. The flues are 2 ft. 9 in. There is a large storage tank holding 12,000 gallons, from which water may be fed to the boilers

draft installation is determined from the contract price, and the expense of a chimney to produce equivalent results is calculated. Costs are shown for both single, force and induced engine-driven fans and for duplex engine-driven plants in which either fan may serve as a relay. An apparatus of this latter type is evidently most complete, and is necessarily the most expensive. It finds its greatest use where economizers are employed.

An average for the costs of these plants shows the total expense for installing a forced draft plant to be 18.7 per cent., that of a single induced fan and accessories 26.7 per cent., and that of a complete duplex induced draft plant 42 per cent. of that of a chimney. In each case a short steel-plate stack is included.

In other words, if a chimney be estimated to cost

direct or by means of a Green's economizer (144 tubes), the scrapers of which are driven by an electric motor. The engines and generators are of American make, there being two McIntosh & Seymour horizontal compound condensing engines, 350 i. h. p., running at 200 revolutions a minute. They have fly-wheel governors and Ledward ejector condensers are used. These take their water from the River Trent by means of a centrifugal pump direct coupled to a motor. The generators are of the G. E. C. multipolar type. A 30 k.w. generator is erected in one corner of the main station, which can be driven direct from the line bus bars, or by a Universal engine which is belted to a pulley which forms a coupling between the motor and the generator.

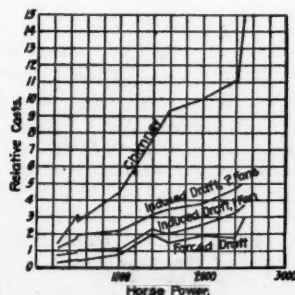


Fig. 1.

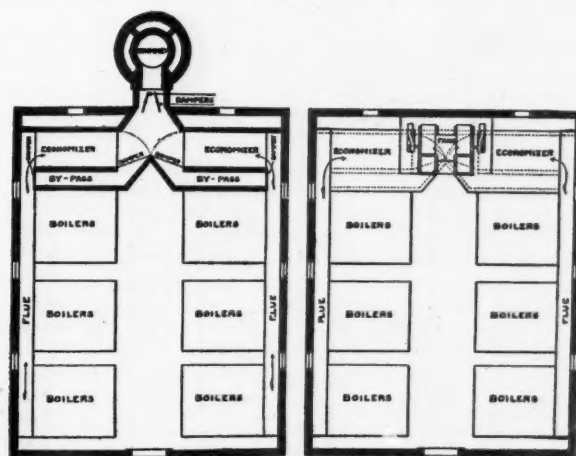


Fig. 2.

Chimney vs. Mechanical Draft.

\$10,000, there could be saved, on a basis of these averages, the respective amounts of \$3,130, \$7,330 or \$5,800 in the first cost, according to which system of mechanical draft is substituted.

A concrete case illustrating the possibilities of mechanical draft is presented in the accompanying drawing, Fig. 2. This shows a plant of 2,400 h. p. of modern water-tube boilers, 12 in number, set in pairs and equipped with economizers. The left hand drawing indicates the location of the chimney, 9 ft. in internal diameter by 180 ft. high, designed to furnish the necessary draft. To the right is the same plant with a complete duplex induced-draft apparatus substituted for the chimney and placed above the economizer connections. Each of the two fans is driven by a special engine, direct-connected to the fan shaft, and each is capable of producing draft for the entire plant. A short steel plate stack unites the two fan outlets and dis-

The track is 4 ft. gage and the rails weigh 87 lbs. per yard.

English practice requires that every line shall be divided into half mile sections, so that any one section can be cut out. Chicago bonds are used throughout, and the usual cross-wires are placed at intervals of about 100 yards, the return feeder being also connected to the rails.

All the feeders are laid on the Callender solid system. They consist of single conductor cables insulated by vulcanized bitumen, and have a heavy tape protection, laid in wooden troughs which are subsequently filled solid with Trinidad bitumen. About 10 miles of feeders have been laid, and for the various feeding points along the routes their sectional areas vary from 25 to 35 sq. in.



ESTABLISHED IN APRIL, 1856.
PUBLISHED EVERY FRIDAY,
At 32 Park Place, New York.

EDITORIAL ANNOUNCEMENTS.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussion of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially either for money or in consideration of advertising patronage.

General Superintendent Potter, of the Long Island road, who abolished suspensions two and a half years ago, has notified the employees of the road that hereafter credit marks will be given for continuous satisfactory service. Two credit marks will be entered for each half year and one of these will offset two debit marks, each of the latter being deemed equal to ten days' suspension. In other words, an employee who has a clear record of six months would not be punished at all for a dereliction which under the old plan would have laid him off forty days. He would, indeed, be deprived of his accumulated record, which he would like to have laid up against the next time of need, but if he succeeded in keeping straight for the next six months he would have his reserve fund restored. The plan now adopted by Mr. Potter appears to be the only rational method of administering "Brown's discipline" on a large road. Exceptional acts of fidelity, heroism or genius are so few and far between, and are governed so much by circumstances which the employee cannot control, that to leave men dependent on these alone for a record to offset their delinquencies is to leave 99 per cent. of them with nothing at all. Every superintendent, even the most conservative, concedes the desirability of mitigating punishment when it becomes necessary to administer it to a man with a long record of efficient service, so that if one enters demerits against his men and makes no record of merits, the only way to deal fairly is to "let up" on the demerits in the case of an old and faithful employee; that is, omit to enter one or more delinquencies. This, however, vitiates one essential feature of "record discipline" which is to substitute a written record for the unreliable memory of the superintendent or other supervising officer. We shall expect most superintendents to criticize Mr. Potter's time-limits as too lenient. If the basis adopted—4½ months to cancel 1 month—is the result of the experience already had with "book suspensions" on the Long Island road, we must conclude that demerits have been pretty rigorously recorded. The Southern Pacific requires a whole year of good service to offset 30 days' demerits, and the Louisville & Nashville two years.

The Effect of the Air Brake Decision.

The long expected decision in the case of the Westinghouse Air Brake Company against the New York Air Brake Company was announced last week and was in favor of the New York Company. The appeal was heard in the U. S. Circuit Court of Appeals for the Second Circuit and the opinion is written by Judge Shipman.

Infringement was alleged of patent No. 538,001, issued to George Westinghouse, Jr., April 23, 1895, and of patent No. 382,032, issued to Theron S. E. Dixon, May 1, 1888, and assigned later to Westinghouse.

The patent of 1895, namely, No. 538,001, was ap-

plied for in 1892, but was not completed for about three years. It involved venting the train pipe into the brake cylinder by the use of a compound piston connected to the brake cylinder piston. So far as we can learn from the opinion of Judge Shipman, it was claimed by Westinghouse that the compound piston method of venting was used by the New York Air Brake Company in valve C of that company (the valve in suit) to vent the train pipe to the atmosphere. It was claimed that this compound piston method of venting the train pipe was of a broad and primary character; but the defendants claim that the scope of this invention is the method by which the train pipe is vented to the brake cylinder. This last is the view of the court. Judge Lacombe dissented from this view.

Therefore, as the New York Company's valve C vents the train pipe to the atmosphere and not to the brake cylinder, and as it uses for this purpose a compound piston, which is a part of the triple valve piston and not dependent on the brake cylinder piston, it is held not to infringe patent No. 538,001.

The Dixon patent of 1888 is for a device which vents the train pipe to the atmosphere, as does valve C of the New York Air Brake Company; but Judge Shipman says "venting train pipe air into the atmosphere in automatic air brakes was an old subject of invention when Dixon entered upon it. Its advantage resulting from the quickness with which the train pipe is vented was well known, as were also its disadvantages by reason of the loss of the benefit of the rapid storage in the brake cylinder of train pipe air which helped to move the brake pistons promptly and energetically." Mr. Westinghouse seeing the disadvantages of venting to the atmosphere, never put the invention into general use. The court holds that a patent can only cover methods of venting to the air, but the New York valve C vents by methods other than those used in the Dixon patent. Therefore this patent is not infringed.

Thus the complaint of infringement of both these patents is dismissed. So far as these patents are concerned the case is ended, and what is to be the effect of the decision?

This is a complicated question, difficult to treat; in what we say now on the subject we shall confine ourselves pretty closely to a statement of certain facts, and deal sparingly in opinions or conjectures. Quite obviously the situation of the New York Company is simpler than it would have been if the decision had gone the other way. An adverse decision would have made it necessary to bring forward still another triple valve or go out of business; and the possible field for the invention of operative triple valves would have been still further narrowed. (We ask particular attention to this word operative. An ingenious man, familiar with the field, can invent a plausible but inoperative valve once a week.) Now the company is free to go on and sell the C valve and the buyer will not be deterred by the fear of the law. Now we shall have a chance to learn whether or not the uncertain legal standing of the C valve has had much effect on possible buyers. There is room to doubt if it has. Naturally, the New York Air Brake Company must have guaranteed a purchaser against loss.

On the other hand, there are other suits pending, one of which involves infringement by this same triple valve C of still other patents. One of these suits is for infringement of the engineer's valve and one is on the pressure retaining valve; and this latter may easily be more important than either of the other suits, as the pressure retaining valve is an essential feature in a large percentage of freight air brake working. Indeed, it cannot be dispensed with on railroads with very heavy grades. And so we see that the legal field is not yet entirely clear.

We said above that there is room to doubt if the uncertain legal standing of the New York triple valve C had had much effect on possible buyers. In fact, there have been reasons quite apart from the legal reasons which have limited the sale of the New York Company's apparatus, and which are as strong now as they were before the decision was rendered.

In our issue of June 23, page 450, a report appears of the action taken in this matter of triple valves at the last convention of the Master Car Builders' Association. The New York Company had declined to furnish triple valves for tests by the committee of the Association for two reasons, one being that the New York Air Brake Company's valve could not fill the requirement that "the final maximum pressure in this test must not be less than 15 per cent., nor more than 20 per cent., above the pressure given by the same brake in full service application." Mr. Massey said that the New York apparatus would not meet that requirement. He acknowledged that it was a good feature in a triple valve, but he did not

consider it a vital or essential feature. Here we see one difficulty, more or less important, in the way of the New York apparatus, and this difficulty still exists. It has not been in any way modified by the result of the lawsuit. The object of this test is to secure uniformity of time and pressure in emergency applications and to secure minimum length of stop and minimum of shock and of trains parting. It is for the officers of the railroads to judge whether or not such requirements are vital and essential in a triple valve.

Another difficulty was pointed out by the counsel for the New York Air Brake Company a year ago, or thereabouts, in arguing this same case. Speaking of the action of the Westinghouse apparatus, he said: "The reservoir air was going in [to the brake cylinder] all the time, but there was the power in the train pipe air, and that advantage was the enormous advantage that appeals so much to your Honor and the other judges in this circuit. . . . The Westinghouse system to-day has 20 per cent. more power in the brake cylinder for setting the brakes than does the defendant's system. . . . The addition of that giant force was made without the slightest sacrifice that was material. . . . We get 10 lbs. less pressure in the brake cylinder, and Westinghouse sets his brake fast enough, and we do not get all the pressure that we should like to have. The fact is, may it please your Honor, that these defendants have endeavored to infringe the Westinghouse patents and have been restrained in this court. They do not infringe these patents at the present time, because they have left out the substantial and important and most valuable feature of the Westinghouse air brake system. . . . These defendants . . . have departed entirely from that valve and are building one which does not have the supreme feature of those inventions and one which is distinctly based on the prior art; but it is a valve which they are able to sell and it is a valve that some people in the community want." These are the words of the counsel of the defendants in this suit, and it is not necessary to amplify them. They indicate clearly enough a reason, entirely aside from legal considerations, which has been acting in this matter.

Further than that, the enormous amount of rolling stock equipped to-day with the Westinghouse brake is in itself one of the most powerful arguments in the mind of a railroad officer against the use of any other form of valve. The contention is often made and records are frequently printed to sustain it, that there is not perfect identity of operation between the New York valve and the Westinghouse valve, but such identity of operation is essential; the lack of it is a constant danger. There are now about 840,000 Westinghouse quick-action freight triples in service and about 860,000 Westinghouse-brakes of all sorts in use in North America. Naturally, a device which does not interchange perfectly with these is handicapped in the market.

Further, it is beginning to be recognized by the mechanical officers of the railroads that the air brake apparatus is the most durable part of a freight car or its equipment. Its life is so long that a small difference in the first cost disappears entirely when measured by its satisfactory or unsatisfactory performance in service, and thus we see that even a considerable reduction in competitive price would often fail to take the order.

Beyond all this one must never forget the constant and ever present effect of the Westinghouse methods in instructing men in the use of the air brake and the influence of the thorough system of inspection and investigation which that company has carried on, all of which has brought it into constant and close relations with the men who are responsible for the air brake, from the top to the bottom, and given those men familiarity with the Westinghouse apparatus, and confidence in it.

Thus we see several pretty strong reasons to doubt if this decision will have much effect in the railroad field. Apparently the company must depend upon a considerable reduction in price to get much increase of sales; and this brings us to still another aspect of the air brake situation which is worth the attention of those who have money to invest.

What is to be the commercial future of the air brake industry? Probably to-day it has reached its culmination as regards volume of business to be done and profits to be made. About six-sevenths of all the rolling stock which will have to be equipped in the United States is already equipped; that is of the cars now in service. When we consider therefore the comparatively small amount of the rolling stock remaining to equip, the comparatively small amount of air brake equipment required to fit the rolling stock built each year, the great capacity of the brake works now running and the

relatively long life of air brake apparatus, permitting its transfer from old cars to new, it seems obvious enough for anybody to see that in volume this industry has culminated.

In what we have said above we have not designed to discuss the merits or demerits of either one of the contending mechanisms. We have stated what we suppose to be some of the principal arguments that weigh in the minds of railroad officers when they are considering the purchase of one or the other of these triple valves.

Steel Water Tanks.

A few roads have recently built steel standpipes instead of wooden tanks at water stations, while a number of others have had the question under consideration. Of the former, the Chicago, Rock Island & Pacific and the Atchison, Topeka & Santa Fe may be mentioned, and last week we showed the Santa Fe standard designs for steel tanks (p. 526).

Probably it is questionable whether steel tanks of ordinary sizes will be much used on account of the first cost; although there are some who believe that in time the price of suitable stock for wooden tanks may increase until there will be no important difference in the cost of the two kinds of construction. For large tanks the steel construction is said to be the cheaper now under ordinary conditions. However, for the present at least, the building of steel tanks has received a check because of the advance in the price of plates and the difficulty in obtaining them. But upon the return to normal conditions in the steel market, the question of steel for water tanks will probably again come up for attention.

This subject was discussed a short time ago by Mr. T. W. Snow in a paper before the Western Society of Engineers, and it would seem that he considers wood to be better than iron, or steel, for ordinary water station tanks of 100,000 gallons capacity and less, but that larger sizes can best be made of steel. In Mr. Snow's paper it was first pointed out that the use of metal for such purposes is not new, but that the early water tanks were made of iron, quite often with an oval-shaped bottom and with vertical sides. To prevent freezing, these tanks were enclosed in brick or stone buildings which were usually heated by stoves in cold weather. In fact the enclosed wooden tank was brought out later, and was considered quite a discovery.

As to the life of wooden tanks, it was stated that one made of good air-dried lumber, and properly erected and maintained, should last an average of 20 years, but if the lumber is improperly seasoned, it may not last 10 years. An instance was cited of a wooden water tank on the Pittsburg, Ft. Wayne & Chicago, which was in service for 32 years. It was thought that nothing would be gained in the life of the tank by using steel instead of wood, and unless great care is taken the steel will deteriorate rapidly.

In a comparison of the costs of tanks in the Middle States, of about 50,000 gallons capacity and made of different materials, it was shown that steel tanks, at normal prices for plates, cost about 120 per cent. more than those made of common white pine; but as the capacity is increased the difference in the first cost of the two kinds of construction becomes less, and for tanks of over 100,000 gallons capacity the steel construction is necessary on account of the impracticability of wood tanks of such large size. The principal objections raised to the smaller sizes of steel tanks are the liability of freezing and the greater first cost, this difference in cost when capitalized at 5 per cent being nearly sufficient to perpetuate a wooden tank; also such wooden tanks are easier to handle and repair with ordinary railroad labor. The steel plates are subject to corrosion by the salts in the water, and in any case the plates must be protected both inside and outside, while the wooden tanks deteriorate principally from without and can better stand neglect.

Mr. Snow seems to think that a careful study of the steel tank question for railroad uses will lead to building tanks of greater diameter and less height. Thus, as an example, instead of a steel standpipe 12 ft. in diameter and 100 ft. high, holding 67,800 gallons above the twenty-foot mark, he suggests a steel tank 20 ft. high and 24 ft. in diameter mounted on a steel trestle, having a tight roof to assist in retaining the heat and an air space or false bottom below. The first costs of two such water stations are estimated to be about the same when the cost of the larger water fixtures, required with the low tank, are taken into account. The cost for pumping water into the low tank, however, is much less, and the danger of the water freezing during cold weather is also materially lessened. It may be noted that the Santa Fe standard steel tanks are 24 ft. in diameter, but in all cases the tanks are set on the ground so that the part below the outlet remains full of water, this being found cheaper than any form of trestle.

In the discussion which followed the reading of Mr. Snow's paper, the principal point brought out was the necessity for properly protecting the steel tank against corrosion. It was thought that the greatest trouble would arise from the action of the

water on the steel plates, but no one present seemed able to suggest a better means than to keep the inside thoroughly painted.

The Half Year's Railroad Earnings.

The Financial Chronicle's reports of gross earnings for the first half of 1899 make a very favorable exhibit, compared as they are with a half year of great prosperity. The largest share of the gain in railroad revenues of the half year has been due to the increased manufacturing output and general business activity. This was already marked even before 1898, but in that year, as in the two previous years, the large crops and their free movement to meet the excellent foreign demand for them, continued to be the determining factor in larger railroad revenues. In the first months of this year the movement of grain was more restricted than in 1898, although the totals have held up pretty well to the figures of previous years.

In June, however, there was a material expansion in this traffic, which accounts for the fact that the gain in gross revenues in that month, \$5,988,000, or over 14 per cent. for the roads whose returns were at hand when the figures were compiled, is about twice as large as for any other month this year. The better comparison made by the grain deliveries of June, however, is partly due to the fact that a year ago the movement of cereals was severely contracted as a result of the collapse of the Leiter speculation. That attempt to corner wheat had caused an unprecedented rush of grain to market. With the 1898 grain shipments so largely swelled on this account it is in the nature of things that a large decrease is shown in comparing this year's totals with those of last year. The receipts of grain at the seaboard in the six months of 1899 are reported as 184,584,000 bushels—against 298,010,000 in the same period last year.

The deliveries of wheat, corn and small grains at the chief western markets reverse these comparisons, for a small gain is shown instead of a loss. The receipts are given as 298,010,000 bushels this year against 283,152,000 in the six months to June 3, 1898. The improvement has been due, however, to the free movement of spring wheat; other grains show a loss, corn receipts falling off nearly 7½ million bushels for instance, and all the markets outside of the spring wheat district reporting smaller deliveries of grains.

With the activity in industrial affairs contributing so heavily to railroad revenues, it is to be expected that the gains will be shared in pretty generally by roads in different parts of the country. This in fact is shown; no particular group makes a decidedly favorable showing as compared with any other, though the granger lines and the Southern roads, which have been benefited by the activity in the iron industry along their lines, make perhaps the largest gains. It is significant that practically every company reporting its gross earnings for the six months reports a higher total than in any of the previous five years. Since railroad revenues began to improve in 1895 the railroads whose figures are included in the reports have made an aggregate gain of fully \$120,000,000. The list of companies reporting gains for the half year in excess of half a million dollars show that railroads in every section gained by the heavier tonnage of the year. The companies which report gains of \$500,000 or over in the six months are the Chicago, Milwaukee & St. Paul, \$2,220,900; Southern, \$1,090,208; Canadian Pacific, \$1,082,065; Great Northern, \$937,456; Louisville & Nashville, \$895,040; Lake Shore & Michigan Southern, \$714,860; Mexican Central, \$650,499; Grand Trunk system, \$631,381; Wabash, \$606,783; N. Y. Central, \$790,887; Northern Pacific, \$555,004; Denver & Rio Grande, \$537,900. Those lines for which the June figures are not yet obtainable but which report a gain in excess of half a million dollars, include the Pennsylvania, \$2,311,800; the Reading Railroad & Coal Companies, \$1,865,105; Lehigh Valley, \$1,537,756; Southern Pacific, \$926,107; Chicago & Northwestern, \$865,297; Jersey Central, \$827,065; St. Paul & Omaha, \$625,376, and Union Pacific, \$578,127.

The Interstate Commerce Commission's report for the year ending June 30, 1898, summarized in our last issue, gives the number of passengers killed in collisions and derailments in the twelve months as 72, which is 4½ per cent. greater than the number shown in the Railroad Gazette train-accident record for the same period. In view of the unofficial character of our record this is a satisfactory corroboration of our figures as one would expect. Besides the possibility of accidents in the far South and West escaping the eyes of our exchange readers, there is the chance that passengers who are at first reported as injured may turn out to be fatally injured and their cases thus be classed by the railroad company among the deaths. The figures of the two reports are as follows:

Casualties in Collisions and Derailments, One Year.	
	Gov't. R. R. G.
Passengers killed	72
Passengers injured	1,134
Employees killed	313
Employees injured	1,803

The discrepancies in the records of injuries are large,

but they do not discredit our reports as one might at first suppose. As we have before remarked, accidents to passenger trains of a serious nature are the only class which are sure to get into the papers and to be made prominent in the news columns, and it is only in the record of passengers that we could expect to approach completeness; and in that record the deaths will obviously be much more accurately reported than the injuries. Our aim, in counting the latter, is to include all cases which will disable a person for, say, a minimum of two or three days. The railroad, on the other hand, naturally includes every slight case on which a claim for damages may be based. As a basis for comparing the relative seriousness of train accidents in one year with those of another, which is its chief purpose, our record need make no apologies.

The Government record gives the number of employees killed and injured in coupling or uncoupling cars, as follows:

	1898.	1897.
Killed	279	214
Injured	6,968	6,283

As the diminution in these items of the record during the five years preceding 1898 appeared to be due in considerable degree to the introduction of automatic couplers (in spite of the fact that the period of transition from the old coupler to the new has not yet ended) we are justified in concluding that the increase now disclosed is due chiefly to an increase in the number of trains and of the men employed, and not to diversity of couplers. Some of the new men taken on were, no doubt, inexperienced. The report shows that the number of persons employed by the railroads of the country in all departments on June 30, 1898, was 6.2 per cent. larger than one year previously, while the increase in the number of trainmen was only 5.7 per cent. This includes conductors, enginemen, firemen and brakemen. One would naturally expect the last percentage to be at least as large as the preceding, for station men and trackmen have to be kept at work, in many cases, as constantly for 30 trains a day as for 40, but the difference here shown is undoubtedly due to the rapid increase in train loads in recent years, by which more freight is moved by the same number of men than formerly; and, very likely, in some degree to the introduction of air brakes on freight trains.

The Terminal Railroad Association of St. Louis, which operates the Union Station, the bridge and the freight terminals on both sides of the river, has been trying to get rid of paying the internal revenue tax on the bills of lading issued at its freight stations; and, according to a report in the Post-Dispatch, the new arrangement does not work very well; and there is a likelihood that the matter will have to be taken to the courts for settlement. It appears that the Terminal Association and the St. Louis Transfer Company, together, have been spending about \$1,000 a month for revenue stamps for bills of lading. On July 1 a new form of receipt was adopted which was designated a "temporary receipt," to be exchanged at the office of the railroad company, over whose line the goods were to be sent, for an "original stamped bill of lading." By this means the burden of the tax was thrown on the railroad company which would (in most cases) have a long haul, while the Terminal Association, carrying goods only two or three miles, was relieved of a considerable burden. This action was taken after consultation with the Internal Revenue Collector, and, it is said, was approved by the Commissioner of Internal Revenue at Washington, who seems to have decided that the Terminal Association was in about the same position as a truckman or other local carrier. But soon after the new plan went into effect it was found that about nine-tenths of the temporary receipts were retained by the shippers, so that the railroad was never called upon to issue a bill of lading, and, in consequence, the Government lost about \$900 a month. The railroads are now wondering how much they will have to pay the Government on the thousands of fifty dollar fines to which they are liable for accepting goods without giving a bill of lading or for issuing bills of lading unstamped.

A press despatch from Victoria, B. C., informs us that an application has been made to the Government for a charter to build a wireless telegraph from Lake Bennett, Alaska, to the Canadian Pacific Railway in British Columbia. Why "build"? Is a charter necessary for the right to put up a pole on a quarter acre of private ground once in a hundred miles? Must authority be got from the Government to sling electricity through the air? We shall next be told that the inhabitant of New York must get a charter in New Jersey to look at summer sunsets or to smell the fertilizer factories. Perhaps, however, our Canadian friends are simply aiming to stake out a claim to sufficient aerial territory to prevent intrusion by rival ether-disturbers. The annoyances so prevalent in various parts of the country during the past few years in consequence of the disturbance of railroad signal circuits by stray electricity from street-car lines suggest that doing business in the sky may not be so free from the sordid elements of earthly life as the poets and electricians would have us think.

Every time the manager of a sky line comes down to eat or to attend to some other mundane affair he is liable to be attached in a suit for trespass. As a practical matter we really cannot see but that the concessionaries for this proposed telegraph will have to be granted an absolute monopoly of the whole of North America, north of Seattle. How else can the currents be transmitted without interference? The whole of our present billion-dollar trusts, with the Vanderbilt Boston-to-Hawaii railroad thrown in, will seem small in comparison with such a gigantic monopoly of earth and heaven.

We give this week in a supplement of about 15 pages of reading matter as complete a list of the railroads building and proposed in the United States, Canada and Mexico, as probably ever appeared in any publication. An evidence of this fact is that the list includes over 1,100 different projects by some 900 companies. Nearly 300 of these proposed lines are actually in process of building. In addition to railroad building, we include a very full list of bridges of all kinds now proposed, and for which as yet, so far as known, contracts are not let. Exercising, as we have, the same carefulness that has heretofore marked these special issues, we present a list that we believe cannot be equalled for completeness, and which should be of immense value to contractors and manufacturers of supplies.

NEW PUBLICATIONS.

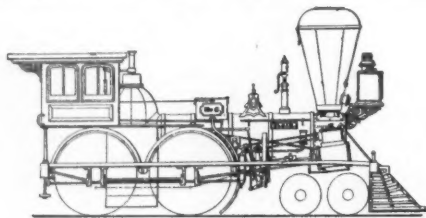
Chimney Design and Theory.—By William Wallace Christie, Mem. A. S. M. E. New York: D. Van Nostrand Company. Pages, 164; 6x9 in.; illustrated. \$3.

The lack of collected data on chimneys has led Mr. Christie to write this treatise, in which he has brought together from many sources much general and some specific information and rules, first freeing the bulk of it, however, from unserviceable and non-essential details.

Historical notes are given in Chapter I. In Chapter II. the author gives Prof. D. V. Wood's analysis of Peclet's and Rankine's theory of chimney draft, which is followed by tables for draft powers of chimneys. In the next chapter are given many useful tables, followed by a good discussion of foundation materials. Thirty-four pages are given to the subject of steel chimneys and 45 to brick chimneys. A number of designs and engravings from photographs of each are shown and some detailed drawings are reproduced. In the last four chapters are many suggestions which should be serviceable to the general reader as well as to the designer, who may rely on the data and rules to guide him in laying out a chimney.

The book is judiciously compiled and carefully illustrated; in a word, it is an addition to the engineering literature on the subject. If inclined to be critical we might note that in some cases the author has failed to express a sufficiently definite opinion on points where exceptions might be taken or differences of opinion arise. It also seems as if he has missed an opportunity in not discussing the relative advantages and costs of chimney and mechanical draft.

Railroad Law of Mexico.—The President of Mexico, acting under a law of Dec. 17, 1898, has promulgated a general railroad law for the United Mexican States, being a revision and codification of all the railroad laws of the country; and Mr. L. C. Simonds, of the Mexican Herald (City of Mexico), has issued a pamphlet containing a complete English translation of the new law. While the policy of Mexico toward railroads is liberal, the details of its regulation of them are very minute and strict, and the present law is full of details which one never sees in the laws of this country. The pamphlet, which fills about 50 pages, divides the law into 14 chapters, the chief of which are Classification, Concessions, Free importation of materials, Survey and construction, Operation, Rights reserved by the Government, Government inspection and Federal jurisdiction. The chapters prescribing the regulations for operation are in great detail. The preparation of tariffs, the conditions under which goods are received and transported, joint liability of different carriers and other such matters are minutely defined and every act of a railroad must be approved by the Department of Communications and Public Works. The price of the pamphlet is 50 cents, presumably Mexican money.



The "Blair," P. R. R.

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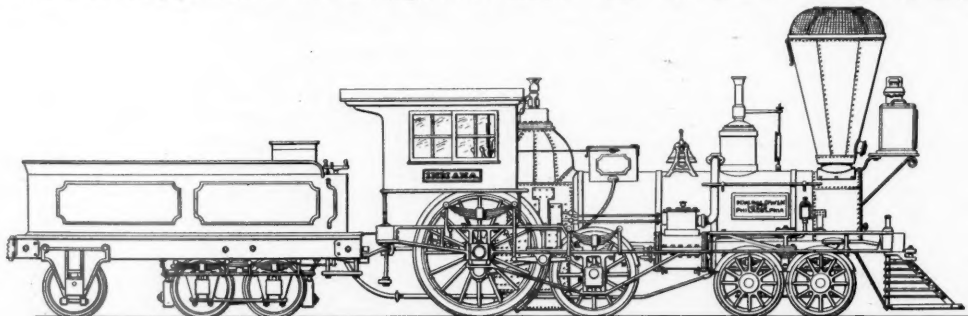
Test of an Otto Gasoline Engine.

Prof. L. P. Breckenridge recently made a test of a 10-h.p. Otto gasoline engine at the University of Illinois, the results of which are given in the accompanying table. Four tests were made with the engine belted to a Curtis tank pump, being the arrangement commonly used at railroad water stations; in fact, the test was made especially to determine the performance of the Otto engine under conditions similar to those at water stations. One test was also made in which the work of the engine was absorbed by a brake. The results as shown by the following table are unusually consistent:

Date.	May 30, 1899.			June 1, 1899.		
With pump or brake	Pump	Pump	Pump	Brake	Pump	Pump
Duration of test, hrs.	2	1½	1½	1½	1½	1½
Indicated horse-power	3.63	3.74	4.65	12.15	4.45	4.45
Theoretical horse-power required to pump water	0.742	0.896	1.24	10.52	0.96	0.96
Theoretical horse-power required to pump water in per cent of i.h.p.	20.47	23.96	26.67	86.56	21.57	21.57
Temperature of water before jacket water, Deg. F.	68	69	68.8	63.6	69	69
Temperature of water after jacket water, Deg. F.	117.3	118.6	117.3	118.5	120	120
Temperature of room air, Deg. F.	84.5	86.1	84	86.4	86.5	86.5
Temperature of exhaust, Deg. F.	79.3	80.9	81	80.6	82	82
Deg. F.	405	416	466	796	461	461
Jacket water, lbs. used per hr.	270	342.6	307.2	836	306	306
Engine, rev. per min.	309	308.4	309	307	309	309
No. explosions per min., average	50.9	49.5	57.1	148.3	58	58
Pump, rev. per min.	57.0	54	53	53	54	54
Head pumped against, ft.	22.7	28.1	41.1	...	30	30
Water pumped per hour, gals.	7,760.4	7,546.4	7,151.6	...	7,388.2	7,388.2
Gasoline used per hour, gals.	0.534	0.54	0.57	1.183	0.108	0.108
Water pumped per gallon of gasoline, gals.	14,533	13,975	12,517	...	14,935	14,935
Gasoline per i.h.p. hour, gals.	0.147	0.144	0.122	0.097	0.114	0.114
Gasoline per b.h.p. hour, gals.	0.112

* Brake horse-power.
* Mechanical efficiency = brake horse-power ÷ indicated horse-power.
† Includes suction lift.

It may be noted that in the pump tests the mechanical efficiency given is that of the whole plant, taking account of the resistance of the engine, pump and ram, and the pipe friction. The consumption of



Baldwin Passenger Engine for Pennsylvania Railroad, 1850-1863.

gasoline per hour in the several tests is seen to vary nearly as the power developed, indicating that the efficiency of the engine is not seriously impaired when working under light loads. The speed in the



several tests was maintained fairly constant. Since the tests, this engine has been used by the University to drive a generator which furnishes current for electric lights, and we are informed that the engine is found well adapted to such work. The indicator diagram shown was taken during the brake test and is a fair sample from more than 50 diagrams taken during the trial.

The Chief Dispatcher.*

Himself a practical dispatcher, taught by the solitary responsibilities of a night trick to do whatever may be needful in any emergency, thoroughly conversant with the approved methods of his line, resourceful, vigilant and possessing the confidence of his superior, the competent chief dispatcher becomes the right hand of the superintendent. This last qualification is the one which enables the hard-working chief dispatcher to maintain the cheerfulness of mind and the vigor of brain wherewith to meet the continued daily strain upon his energies, and to face with a clear head and a contented soul the problem that confronts him in ever varying phases, how to do the maximum of work with the minimum of train mileage, to keep down overtime, to get 100 miles of service for each 100 miles of train pay, within twelve hours of telegraph work, appoint, examine and discipline operators, maintain due efficiency of service without undue rigor, to anticipate and provide for sudden extreme demands of unusual service, and to preserve throughout a calm and unruffled composure of demeanor, whatever may turn up.

The relation in which the chief dispatcher stands to his superintendent is so intimate that it seems to me unwise, if not unjust, to have any other official between them. Why should not the positions of trainmaster and chief dispatcher, where both are necessary, be co-equal in authority? Their duties are sufficiently distinct to make such a separation not only practicable, but, from my point of view, desirable. The dispatcher's duties are derived from

*Extracts from a paper by J. F. Mackie, read before the Milwaukee Convention of the Train Dispatchers' Association.

the superintendent, not from the trainmaster. The latter has charge of trainmen. Subject to the superintendent, he employs, disciplines or discharges them. The larger portion of his time is spent on trains, observing how they are handled, seeing that the rules are lived up to and all necessary train duties properly performed. It does not seem to me that the superintendent can obtain better service from the chief dispatcher at second than at first hand.

Fast Passenger Locomotives on the Pennsylvania Railroad in 1850.

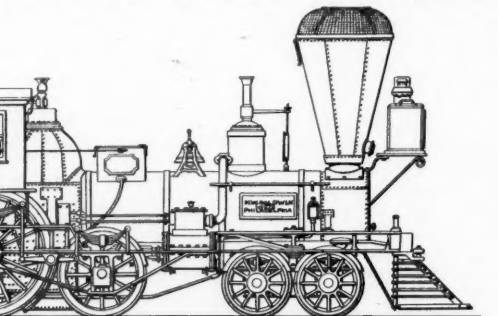
By C. H. Caruthers.

Mifflin, Blair and Indiana were the names of three locomotives of the "Crampton" type, built for the Pennsylvania by M. W. Baldwin in September, 1849, and January, 1850. They averaged 47,000 lbs. in weight; had cylinders 14 x 20 in.; drivers, 72 in. diameter; carrying wheels, 46 in. diameter, and truck wheels, 33 in. diameter.

The boilers were provided with a small dome near the forward end, and this dome contained the throttle, from which a dry pipe passed out through the back of the dome and then divided into two parts which extended around the outside of the boiler to the steam chests. The rear of the boiler was provided with a half round firebox 36 in. from back to front inside and 58 in. from grate to crown. This was surmounted by a "Bury" dome 44 in. in diameter and this dome carried a smaller dome or cover 15 in. diameter and 10 in. deep. On this was placed the whistle and a safety valve, while another safety valve was on the cover of the front dome. A square sand box and a bell completed the external boiler mountings. Quite a large cab covered the foot plate.

The cylinders were placed horizontally, 88 in. back from the front of smokebox and connected to small dome through the steam chests as described, while the exhaust was carried in pipes under the boiler and entered the bottom of the smokebox.

The valve motion consisted of a full stroke valve worked by D hooks, which were attached to the arms of the tumbling shaft of reverse lever by links or hangers which were fitted at one end with slotted



The "Mifflin," P. R. R.

holes to allow for movement of hooks in radii described by motion of rockers and eccentrics. There were different eccentrics for back and fore gear. Mr. Baldwin had by that time apparently abandoned his earlier style of obtaining both motions from a single eccentric.

A partition plate divided the steam chest into an upper and lower story. This plate had one port in it and a valve having a similar port traveled upon the plate as a seat. This valve was driven by an eccentric set for forward motion and to cut off steam at one-half the stroke. The rod from this eccentric contained a D hook on its outer end which could be thrown on or off the pin on lower arm of the rocker by link and tumbler similar to that used on full stroke hooks. There were, of course, two sets of rockers and of gear for throwing hooks into or out of connection, one set for the cut-off valve and

the other for the full-stroke valve; the only difference being that the full-stroke gear was for both back and forward motions, while the cut-off was for forward motion only. All this controlling mechanism was under the foot-plate and close to rear bumper. The tops of the rockers were provided with pockets to receive hand levers to facilitate throwing hooks in contact; and old engineers inform me that they used these hand levers alone to work engine in making couplings as being more convenient than working with hooks in gear.

The pumps were placed directly in front of the cylinders, with the check on side of boiler close to the front tube sheet. The working barrel extended back along the inner side of the cylinder and the plunger was connected to the crosshead.

The frames were on the outside of the wheels, and

this arrangement necessitated the use of outside journal boxes for the drivers and carrying wheels. Each engine has but a single pair of drivers, placed with centre of axle 10 inches back of firebox; the curved form of firebox allowing more space at the part of axle where eccentrics were placed. These drivers were fitted with the Baldwin half-crank axle, in which the wheel itself formed the outer cheek of the crank while the pin for the rod extended inward to the arm on end of axle. A short axle was fitted in the wheel centre and extended outward into the journal box.

The wheels I have designated "carrying wheels" were in front of the firebox (one pair), and their springs were connected by equalizing beams to the driver springs. A lever from the cab was connected to these equalizers by a link and short fulcrum so that at starting weight could be thrown off the carrying wheels upon the drivers and returned when sufficient headway was obtained. When running with weight distributed, the weight was about as follows:

Trucks	15,000 lbs.
Carriers	14,000 "
Drivers	18,000 "
Total	47,000 "

The use of the lever named, increased the weight on the drivers to 24,000 lbs., of course reducing that on the carriers correspondingly.

The truck wheels were 33 in. diameter. They had inside boxes and were in an iron frame with a 28 in. half elliptic spring above each journal box, on the top of the frame. The axles were 40 in. apart.

The tenders of these engines held about 1,300 gallons of water, and were carried on six wheels of 33 in. diameter. The rear pair were carried in pedestals bolted to the sills of the tender frame and the other two were in a centre-bearing swivelling truck similar to that under the engine, but with outside boxes and springs.

Mr. Baldwin never built more than five of this type of engine. The first was his "Governor Paine," for the Vermont Central, which had 78 in. drivers and 17½ in. x 20 in. cylinders; the three just described; and the "Susquehanna," with 15 in. x 20 in. cylinders and 72 in. drivers, for the Hudson River.

These engines were built for speed, and the odd location of cylinders was to counteract vibration. One of the Pennsylvania's has a record of four miles in three minutes, and another one of the three once made quite a long run at a speed of a mile a minute. These engines appear on the drawings at the Baldwin shops as "Class A."

The Indiana was changed somewhat by the railroad company. The front dome was removed, the cylinders raised and set at an angle, the steam pipes carried to the rear dome, entering at its front; the 72 in. drivers replaced by a pair 60 in. diameter, and the carrying wheels removed. In this form it did light service on branch lines and later on work trains, being finally put out of service and scrapped late in 1862. In 1857 its name was removed and it was thereafter known as No. 10. This number, by a coincidence, is now borne by a Class K engine which was built in 1881 and was the first of a lot built at Altoona to meet the requirements of the New York Division for fast time on passenger trains.

The Mifflin, afterward No. 5, was changed several times. The cylinders were removed to the forward end; new standard frames were made, the 72 in. drivers and 46 in. carriers were replaced by two pairs of 66 in. drivers, a square firebox with a wagon top carrying a column bearing the safety valves replaced the semicircular box and Bury dome; the small dome forward was retained, but had its safety valve removed from the top and the whistle substituted, the whole being covered with a neat jacket; a sandbox, set up on a pedestal, carried the bell on its top; and link-motion replaced the hooks.

The Blair, No. 6, was soon remodeled. The Bury dome and semicircular firebox were retained, but the small dome forward was removed and a column carrying the whistle took its place. New frames of standard type were put in and two pairs of 72 in. drivers replaced the single pair of drivers and the carrying wheels. The cylinders were placed forward at quite an angle on the sides of the smoke-box. The hook-motion was retained, but remodeled on a plan used by Mr. Baldwin on many of the earlier P. R.R. and other engines. The dry-pipes of both Blair and Mifflin were put inside the boiler.

The tenders of Blair, Mifflin and Indiana, after the changes referred to, were carried on three pairs of wheels on pedestals fastened to the frame, instead of on a 4-wheel truck and one pair of wheels in rigid pedestals, as first built.

Baldwin's construction numbers of these engines were: Mifflin, 356; Blair, 371; and Indiana, 372. Lansdowne, Pa.

TECHNICAL.

Manufacturing and Business.

The Chicago Grain Door Co., Chicago, will furnish Rabbited Grain Doors for the 500 box cars recently ordered by the Illinois Central for the American Car & Foundry Co.

Mr. Edward Denegre has been appointed Mechan-

ical Engineer for McCord & Company, with headquarters at Chicago.

McCord & Company are making an exhibit of the "Johnson" hopper bottom for coal and ore cars in Chicago. The exhibit is the same as that used by them at the Old Point Comfort Conventions, and is installed in the basement of the Old Colony Building. Many of the western roads are considering the use of hopper bottom cars.

We are officially informed that the Board of Directors of the Illinois Car & Equipment Company has created the office of Assistant General Manager and has promoted to the position D. L. Markle, who has been with the company two and a half years. His duties combine the buying of all supplies and assistance on executive operation of plants.

The Detroit Steel & Spring Co., Detroit, Mich., has been compelled, owing to its increasing business, to add three more coiling machines, making eight now in use. The company reports a large business in elliptic springs for locomotive and passenger car service, and that, although working night and day, it can hardly keep up with its orders. Another iron building 150 by 75 has been added to the plant, giving greater facilities for making springs, machinery and merchant bar steel. A brick office building 75 by 120 has also been built.

The Detroit Graphite Manufacturing Co., Detroit, Mich., is just shipping a car load of its "Superior Graphite Paint" to New York, destined to the Sandwich Islands.

The Detroit Lubricator Co., of Detroit, Mich., has made it a practice to number its lubricators consecutively as made, commencing with No. 1. On July 20 No. 450,000 was finished.

The Harrison Dust Guard Co., Toledo, O., has furnished dust guards to the Southern for 1,100 cars, and to the Toledo & Ohio Central for 500 cars.

The Cling-Surface Mfg. Co. reports rapidly increasing sales, not only in this country, orders being received from Australia, European and South American countries, with a growing business in Mexico. The company gives an extract from a recent letter from the engineer of Brown, Durrell & Co., Boston: "Having tried Cling-Surface on my 12-in. dynamo belt, I have been able to carry full load with 22-in. sag on belt with no perceptible slip. It surpasses my expectations."

Iron and Steel.

The Iron Trade Review reports that the plans of the large steel companies for additional blast furnaces indicate that within 15 months the pig iron output of the country will be increased by 2,500,000 tons a year. Among new furnaces mentioned are four for the Federal Steel Co., with a capacity of 2,400 tons a day; four for the National Steel Co., with a capacity of 2,400 tons a day; two for the American Steel & Wire Co. with a capacity of 1,200 tons a day, and two which are under consideration by the Carnegie Co. at Duquesne.

It is reported from Joliet, Ill., that the three rod mills of the Federal Steel Co. which have been shut down since July 1, pending the settlement of the Amalgamated scale, have started up, giving employment to 700 men. The plant of the American Steel & Wire Co. at Joliet, which has been shut down for some time, has also started up.

D. L. & W. 100-Ton Consolidation Engine.

The 100-ton consolidation locomotive which is being built at the Scranton shops of the Delaware, Lackawanna & Western Railroad is nearly completed. This engine was designed by the Master Mechanic, Mr. David Brown, and the chief draughtsman, Mr. Mallon. Some particulars are as follows:

Weight, total.....	200,000 lbs.
on drivers.....	175,000 lbs.
Piston stroke.....	30 in.
Diameter of cylinders.....	22 in.
Firebox, length.....	10 ft. 6 in.
width.....	9 ft.
Grate area.....	94½ sq. ft.
Tubes, number.....	413
diameter.....	2 in.
length.....	13 ft. 2 in.
Boiler, inside diameter.....	74 in.
Steam pressure.....	200 lbs.
Diameter of drivers.....	56 in.
Wheel base, rigid.....	15 ft. 6 in.
total.....	23 ft. 11½ in.

A Proposed English Railroad Club.

Mr. Charles S. Lake, writing to the "Engineer," London, states that an attempt is being made in London and elsewhere to organize a railroad club for the study and discussion of locomotive and other problems of interest to mechanical men. Possibly there are those in this country who may care to become members of this club and receive the proceedings. If so, further information can be obtained from Mr. Lake, at 45 Southampton Building, Chancery Lane, London.

M. C. B. Rules of Interchange.

Mr. Joseph W. Taylor, Secretary of the Master Car Builders' Association, 774 The Rookery Building, Chicago, Ill., announces that the revised Rules of Interchange will be ready for distribution July 25. They are to go into effect Sept. 1. They are to be sold at the usual price and can be had in large or small quantities by those who make application to the Secretary.

American and British Locomotives.

The Engineer (London) continues to try to instruct British engineers and manufacturers in the things that they ought to do to hold trade in competition with the Americans. In a recent issue it dwells at considerable length on the fact that American locomotives are better adapted to the colonies, and, as The Engineer expresses it, to "bad track" than British locomotives. Where the rigid English engine with its plate frames and stiff, accurate fitting will jump the track or tear the track to pieces, the more flexible American engine will run easily and safely and keep cool. The article closes with these words: "The locomotive building firms in this country are by no means numerous; and we venture to say that they have nothing to learn from Americans or anyone else. But this is not true of other people in this country, and it is the other people who settle what the locomotives for distant lands shall be." We suppose that the other people are the consulting engineers in Westminster.

Car Lighting in Prussia.

A letter from a distinguished engineer in Germany informs us that the Prussian State Railroads, after considerable trial of the Stone system of lighting from the axle, gave it up entirely a few months ago. All the apparatus put on for trial has been removed.

THE SCRAP HEAP.

Notes.

The Nashville, Chattanooga & St. Louis has abolished suspension of employees.

The Delaware & Hudson road presents bouquets of flowers to lady passengers on four of the through trains (two each way) every day at Oneonta, N. Y.

A great flood in the northwestern part of Texas did serious damage to the track and roadbed of the Fort Worth & Denver City road on July 19. The damage was in Childress County, 200 miles northwest of Fort Worth. The bridges over Little Red River and over Pease River were carried away.

The general selling of three-cent tickets over the street railroad lines of Detroit was discontinued on July 21. These tickets (eight rides for 25 cents) are still sold for the use of working men in the morning and the evening, and there are certain new lines which continue to sell them at all hours, in accordance with a requirement of their franchises.

The Baltimore & Ohio is changing the dining cars on its "Royal Blue Line" trains, so that each car will have a table d'hôte compartment and also a cafe, where the service will be by the card. This part of the car will have easy chairs, tables and other conveniences of a first-class cafe, where gentlemen can smoke and eat without interfering with those who prefer a different state of things.

Elevator B, of the Cincinnati, Hamilton & Dayton at Toledo, containing about 900 bushels of wheat, was destroyed by fire on the night of July 23, together with 100 cars of grain on adjoining tracks. The total loss is over \$1,000,000. The elevator was built in 1895, to take the place of one which was burnt down in that year. An explosion of dust is supposed to have been the cause of this fire.

The Washington correspondent of the Journal of Commerce, New York, says that the presidents of the railroads west of Chicago are so well pleased with the results of their recent conferences, which were held at the suggestion of the Interstate Commerce Commission, that they are going to hold similar conferences every month hereafter, and have invited the members of the Interstate Commerce Commission to be present. The meetings are to be held on the second Tuesday of each month alternately at Chicago, St. Louis and Washington. The next meeting is appointed for Chicago, Aug. 8.

The passenger trains of the Boston & Albany began running into the new South Station at Boston on Sunday, July 23. On the same day the trains of the Plymouth and Midland divisions of the New York, New Haven & Hartford began to run over the new roller lift drawbridge at the entrance to the new yard. It was expected that the B. & A. trains might suffer some delay on Monday by reason of the unfamiliarity of the men with the signals, but we are informed that everything moved like clockwork. The trains of the Providence Division will not run into the new station for two or three months yet.

The Long Island Railroad has issued a revised code of regulations governing the hours of men employed at stations and at signal towers. Tower men working 12 hours a day will be relieved one day a month without loss of pay. At the small stations 12 consecutive hours constitute a day's work, and agents having to work more than this length of time will be allowed proportionate additional pay, though if the extra time is not more than half an hour it will not be counted. At certain stations, named in the circular, the agent is allowed one day off each week, during the summer, without loss of pay, in lieu of an overtime allowance. The regulations concerning entries of merits and demerits under "record discipline" have been changed, as noted in the editorial column of this issue.

A Fast Run on the Vandalla.

We have received particulars of a very fine run on the Vandalla Line in which 18 miles was covered at 77 miles an hour and 15 miles at 82 miles an hour. The train consisted of eight cars, these being two postal cars, one combination coach and baggage car, two day coaches, two sleepers and one dining car, which, it will be seen, was a pretty heavy train. The locomotive was one of the Schenectady 8-wheelers shown in the Railroad Gazette April 28, page 297. The cylinders are 20x26 in., the drivers 78 in., the weight on drivers 85,800 lbs. and the total heating surface 2,241 sq. ft. and grate surface 30.07 sq. ft. This was regular train No. 20 of the Vandalla which passed Clayton eight minutes late and passed Transfer Station one minute late. The distance is 18 miles and the time was 14 minutes, or 77 miles an hour. During this run the distance from Cartersburg to Transfer Station, 14.93 miles, was made at about 82 miles an hour. We are assured that these figures are absolutely authentic.

The St. Paul's Evanston Line.

The Corporation Counsel of Evanston, Ill., has rendered an opinion to the City Council that the City of Evanston will never be able to compel the Chicago, Milwaukee & St. Paul to elevate its tracks within that city. The question has been under discussion since the franchise was granted the Chicago, & Milwaukee Electric Ry. to operate a street car line along the right of way of the steam road from Church St. to the northern limits of Evanston. The steam road leased its tracks over the right of way to the street car company, the matter being complicated by the street road running trains over part of the distance and the steam road over the rest of the way. The Corporation Counsel now holds that the change of motive power has changed the steam road to a street railroad line, the cars of which are equipped with fenders, wheel guards and other safeguards, and that for this reason the city cannot require that its tracks be elevated. The opinion was prepared by order of the City Council.

Japan Railroad Notes.

A company composed of Japanese capitalists has been formed to deal in railroad ties and lumber with a view especially to selling to railroads to be built in China.

The last section of the Hankoku Railway is expected to be finished and open for traffic by the end of July. An extension of 25 miles will be built from Fukuchiyama to Miyazaki.

The Sanyo Railway early last month put in service two dining cars. The food served is principally European dishes, classified into three grades and costing respectively 35, 25 and 15 cents. Lemonade and other beverages are served at an additional cost.

A company composed of Mr. Koshichi Tanabe and seven other capitalists has been formed with a capital of \$75,000 to build an electric railroad in Yokohama. It is to extend from Bente Bridge, opposite the railroad station, in different directions through Yokohama.

The Shibaura Iron Works has turned out for the Imperial Railway Bureau the necessary apparatus for lighting a car by the Stone system of electric lighting. Should the apparatus work satisfactorily further orders will be given to the same works for equipping trains on the Government lines, which are now using generators of English make. The Kiushu Railway has also recently imported similar machines for use on its line.

In the Japan Times of June 4 appears an account of a recent meeting at Osaka of the Tetsudo Kyokai (Railroad Association). The principal speaker, Dr. K. Minami, stated that the regulations which govern the working and construction of railroads in Japan have not been modified since the 25th year of Meiji, and have for their object "no other consideration than that of encouraging the building of railroads, leaving entirely out of their view the business side of the question, which looks upon railroads as organs of public service, ensuring despatch, convenience, comfort, etc." As this is to be accomplished only by competition, Dr. Minami would urge the building of new lines, paralleling existing railroads when necessary; would consolidate into trunk lines a number of small roads; would sell some of the Government lines to private companies to accomplish better traffic arrangements, and would have the Government buy up certain companies and consolidate them to work to better advantage. The railroad systems are far in advance of the general public, which does not seem to be able to utilize the facilities offered, although the facilities are far behind American or English practice. In concluding, Dr. Minami suggested improvements, especially by increasing the speeds of trains.

LOCOMOTIVE BUILDING.

The Baldwin Locomotive Works is building two engines for the Chesapeake & Ohio.

The Victoria railroads of Australia are preparing to buy both passenger and freight locomotives.

The Pennsylvania Steel Co. is having one locomotive built by the Schenectady Locomotive Works.

The Delaware, Lackawanna & Western is building a consolidation engine at its Scranton shops. (See description in another column.)

We are informed, but not officially, that the Choctaw, Oklahoma & Gulf has ordered three freight locomotives from the Baldwin Locomotive Works.

We are officially informed that while the Pittsburgh, Bessemer & Lake Erie may order some locomotives next winter, nothing has been decided about the matter as yet, as was recently reported.

CAR BUILDING.

We are reliably informed that the Pennsylvania will, in the near future, order 2,000 steel cars.

We are informed that the Indiana, Illinois & Iowa car order has been postponed for one week.

The Chicago, Rock Island & Pacific is having four passenger cars built by Pullman's Palace Car Co.

We understand that the Illinois Central is considering buying some coal and flat cars, but nothing has been decided.

The New York Central & Hudson River has ordered 10 passenger coaches from the Wagner Palace Car Co. similar to the 21 ordered some time ago.

The Express Coal Line are having a large number of their gondola cars altered and repaired by The Allison Mfg. Co., for use on Southern RR. system.

We understand that the Chicago, Burlington & Quincy may build a few cars at its own shops to fill missing numbers, but we have no official information.

We understand that Pullman's Palace Car Co. is building three passenger trains on its own account which will be taken by the Chicago & Alton when completed.

The Butte, Anaconda & Pacific is considering ordering about 100 more steel cars in addition to those noted in our issue of May 5, but the matter has not been fully decided yet.

It is reported that the Denver & Rio Grande has ordered one dining car from the American Car & Foundry Co., and that it will build or order outside from 20 to 25 caboose cars.

In our issue of July 14 we noted that the Cumberland & Pennsylvania had placed an order with the South Baltimore Car Works for 20 cars. We now learn that the order is for 30.

The Louisville & Nashville has ordered 500 box cars from the American Car & Foundry Co. for September and October delivery. They will probably be built at the Madison works.

The Allison Mfg. Co. has just completed a contract for Westmoreland Coal Co.'s 80,000 lbs. capacity Hopper gondola coal cars, new class "Gk"; Pennsylvania RR. standard. The order for which we noted Mar. 31.

We are officially informed that the Illinois Central is considering buying some passenger equipment for its Western lines, but the matter is not positively settled, and no decision has yet been reached as to the number.

In our issue of last week we stated that the Colorado & Southern had placed an order for 90 steel cars with the American Car & Foundry Co. This is incorrect. The cars will be built by the American Steel Foundry Co. at its Granite City (Ill.) works.

The Chicago, St. Paul, Minneapolis & Omaha will build at its own shops 250 box cars of 60,000 lbs. capacity, to weigh 30,000 lbs., to be 34 ft. long, 8 ft. 9 in. wide over sills and 7 ft. 2 in. high in clear. Westinghouse air brakes, Christie brake shoes, Chicago couplers, plastic roofs, lead-lined brasses and special draft rigging of the road will be used.

The 1,000 box cars that the Chicago, Milwaukee & St. Paul will build at its Milwaukee shops are for Sept. 15 delivery. They will weigh 30,500 lbs., will be 33 ft. long inside, 8 ft. 7 in. wide inside and 8 ft. 8 1/2 in. high, with a capacity of 60,000 lbs. The 500 furniture cars are for Sept. 1 delivery and will weigh 34,500 lbs., the capacity being 60,000 lbs. They will be 40 ft. long inside and 8 ft. 8 in. wide and 9 ft. 5 1/2 in. high inside. The 250 coal cars and the 250 flat cars are for Jan. 14 delivery and will have a capacity of 60,000 lbs. They will be 36 ft. long, 9 ft. 3 in. wide, the flat cars weighing 23,300 lbs. and the coal cars weighing 30,000 lbs. All will have Westinghouse air brakes, Hein couplers and National springs. The box cars will have swing motion trucks, the furniture and box cars Murphy roofs, furniture and coal cars Barber trucks, draft rigging, journal boxes and brake beams standard of the road, iron axles and bolsters.

BRIDGE BUILDING.

ABERDEEN, WASH.—The contract for the repair of the North Aberdeen bridge was awarded by the City Council to Savage & Scofield, of Olympia, for \$1,387. (June 2, p. 391.)

ALBANY, ORE.—Bids with plans and specifications, etc., are wanted by the County Court until Aug. 8 for building a covered bridge and approaches over the Muddy Creek, at or near the site known as the Agey bridge. Frank A. Crabtree, County Clerk, Lynn County.

ALLENTOWN, PA.—The proposed bridge over the Lehigh Valley RR. at Seventh St., including the approaches, will be 540 ft. long. It will be of iron and have a 30 ft. driveway, with sidewalks 12 ft. wide.

APPLETON, ONT.—C. T. Wilkie, Ramsey Township Engineer, Carleton Place, Ont., wants bids for a steel bridge across the Mississippi River at Appleton, Lanark County.

BEAVER FALLS, MINN.—The Renville County Commissioners have made an appropriation for the steel and iron bridge to be built over the Minnesota River between the towns of Swedes Forest, Redwood County, and Sacred Heart, Renville County. Estimated cost, \$6,500. A. H. Anderson, County Auditor.

BELTON, TEX.—The Commissioners' Court of Bell County are receiving bids for repairing bridges that were washed away during the recent flood. All the bids submitted for replacing the iron bridge across the Leon River near Miller Springs were rejected July 14, and the Court asked that new bids be submitted. Ben. D. Lee, County Clerk.

BLOUNTVILLE, TENN.—Reports state that several new steel bridges will be built by Sullivan County.

BREWTON, ALA.—The Converse Bridge Co., Chattanooga, Tenn., has the contract for the superstructure of the two steel bridges over the Conecuh River at \$6,060 and \$9,011. (July 7, p. 496.)

BROADLANDS, ILL.—Bids are wanted Aug. 1 for the steel bridge across the Embarras River, two miles east of this town. Address Thomas B. Kyle, Treasurer of Campaign County, Urbana.

BURLINGTON, VT.—Sealed bids are asked for by the Board of Street Commissioners for 2 p. m., July 31, for an iron or steel bridge of two spans, one of 144 ft. and one of 148 ft. in the clear. Bids are asked for a standard bridge of 16 ft. wide and 18 ft. wide; also for a 20 ton bridge of 16 ft. in width and of 18 ft. in width. N. K. Brown, Chairman of the Street Commissioners. (July 14, p. 512.)

BUTTE, MONT.—The Great Northern has awarded a contract to Lassig & Co., Chicago, Ill., for the steel to be used in the two big new bridges in Montana, to cost \$75,000. One of these bridges over the Cut Bank River will be about 1,200 ft. long, and the other over Two Medicine River, 1,100 ft. long, replacing wooden structures. (July 21, p. 528.)

CALDWELL, TEX.—The Attorney General has approved of an issue of \$4,000 worth of bridge bonds by Burleson County.

CAMDEN, N. J.—The following are the bids received by J. J. Albertson for the steel highway bridge over Penshankin Creek for which the Groton Bridge & Manufacturing Co., as previously noted (July 14, p. 512), has the contract:

	One Abutment.	Super-structure.
Wrought Iron Bridge Co.....	\$1,085	\$1,060
B. F. Sweeton & Son, Camden, N. J.....	1,093	1,094
Groton Bridge & Mfg. Co.....	1,055	1,015
F. R. Long & Co., New York.....	1,200	1,090
Stacy B. Odyke, Philadelphia.....	1,102	1,013

CANNELTON, IND.—Bids are asked for Aug. 8 for an iron bridge, with approaches and abutments, over Deer Creek at Armstrong's Ford. John Scull, Chairman of the Perry County Commissioners.

CANYON CITY, ORE.—The Clerk of the County Court will receive bids until Aug. 12 for building a levee and repairing approaches to the North Fork bridge. J. A. Powell, Clerk of Grant Co.

CARTHAGE, TENN.—L. A. Ligon, of Carthage, and others, have been appointed a committee to have a bridge built across the Cumberland River to be owned and controlled by Smith County.

CHARLESTON, TENN.—Wm. A. Slayton of Chattanooga has received the contract for the stone work for the bridge across Mouse Creek near Charleston at \$2,000. The Converse Bridge Co., as reported last week, has the contract for the steel.

CHARLOTTESVILLE, VA.—A bridge across the Ravinna River, to cost \$5,000, is in consideration by the City Council. Albemarle County will pay part of the cost.

CHATHAM, ONT.—Contract will soon be let for building some bridges in the township of Dover. Plans are on file in the Township Clerk's office, Head St., Chatham.

CINCINNATI, O.—Bids are asked by Eugene L. Lewis, Auditor of Hamilton County, for 12 o'clock noon, Aug. 19, for bridges and approaches thereto over the south fork of Taylors Creek in Miami Township. The county recently issued \$31,000 of bonds for bridge work.

COLFAX, WASH.—The Commissioners of Whitman County want bids until Aug. 9 for material and building a bridge across the Palouse River on the Henry Fisher road. The bridge is to be a combination span 115 ft. long, with an 18-ft. roadway. Each bid is to accompany plans and specifications. John F. Corner, County Auditor and Clerk to the County Board.

CORVALLIS, ORE.—The County Court of Benton County wants bids until 2 p. m., Aug. 9, for building a bridge across the slough near the Wiley Winkle school; same to be a pile bridge with a span of 265 ft., no approaches. Plans and specifications are asked with the bids. Virgil E. Watters, County Clerk.

DESMET, S. D.—L. I. Olston, Auditor of Kingsbury County, wants bids Aug 2 for three county bridges.

DETROIT, MICH.—The Wayne County Supervisors have been petitioned to allow Springwells Township to hold a special election on the question of issuing bonds in the sum of \$10,000 or paying half the cost of the proposed new iron swing bridge over the Rouge River at Fort St.

Separate proposals will be received at the office of the Park & Boulevard Commissioners, 9 Peninsular Bank Bldg., Detroit, Mich., at 4 p. m., July 31, for two masonry bridges to be built on Belle Isle Park. P. H. A. Baisley, President.

DOWNIEVILLE, CAL.—The bridge across the Slate Creek is declared in an unsafe condition. A steel bridge will probably be built. Henry E. Quigley, Clerk of the Board of Supervisors.

EUREKA, CAL.—The County Surveyor will prepare plans and specifications for the proposed bridge across Mad River, at Hannah's Crossing, and when the plans are filed the Clerk will advertise for bids. (July 7, p. 496.)

W. H. Haw, County Clerk, will receive bids for a bridge across Boulder Creek on the Three Cabins road; also for a bridge across the Little River.

FOWLER, IND.—The following bids were received July 5 by County Surveyor J. A. Blasdel for the five small steel county bridges, the spans of which are 20, 14, 18, 28, 24 and 14 feet, with roadways of 14, 16 and 18 ft.: Attica Bridge Co., \$1,402; Lafayette Bridge & Iron Co., \$1,459; Indianapolis Bridge & Iron Co., \$1,464; Wabash Bridge Co., \$1,490; Champion Bridge Co., Wilmington, O., \$1,505; New Castle Bridge Co., \$1,570. (June 30, p. 479.)

GALVESTON, TEX.—The Road & Bridge Committee of the Council has recommended that improvements be made to the Galveston Bridge which will cost about \$18,000.

GRAND RAPIDS, O.—Bids are wanted at 12 noon, July 28, for the superstructure of the proposed bridge across the Maumee River. George M. Godfrey, Auditor of Lucas County, Toledo.

GRANTS PASS, ORE.—The contract to repair the Rogue River bridge is let to E. C. Ranous. A new bridge has been ordered built across the Wolf Creek in District No. 23. Wm. Henrichs, Clerk of Sherman County.

HAMILTON, ONT.—The following bids were reported received July 6 for the bridge across the Bitter Root River: Carlson & Finnegan, Hamilton, \$5,553; O. E. Peppard, Missoula, Mont., \$5,581; Dana & Graham, Missoula, \$5,900; Gillette-Herzog Mfg. Co., Minneapolis, \$6,000; McLouth & Co., Leavenworth, Kan., \$6,400.

HARTFORD, CONN.—The Railroad Commissioners have filed a decision in the matter of the extension of Sigourney St. from its terminus at Sargeant St. across the tracks of the Central New England Ry. to Albany Ave. It will require a bridge of 99 ft. One-

half of the expense to be borne by the city and the other half by the railroad.

HUME, ILL.—The Clinton Bridge & Iron Co. has the contract for the steel bridge over Spring Slough. (July 21, p. 528.)

JERSEY CITY, N. J.—The bridge to be built over the railroad cut at Jackson Ave. by the North Jersey St. Ry. will be done by the company. No contracts will be let.

JOHNSTOWN, PA.—An ordinance has been introduced in the Common Council for an overhead bridge spanning the Pennsylvania RR. tracks at Elk St.

JONESBORO, TENN.—John Bogenshot is reported to have the contract from the Washington County Court for a large stone and steel bridge over the Wataug River.

KANKAKEE, ILL.—Plans and specifications are asked for the proposed bridge over Kankakee River, the bridge to be either a concrete, stone or plate girder, 625 ft. long, with a roadway 24 ft. wide and an 8 ft. cement sidewalk. Address F. H. Holmes, Chairman of the Committee, or R. D. Gregg, City Engineer.

KILLINGLY, CONN.—The Railroad Commissioners have granted the People's Tramway Co. permission to build a bridge across the tracks of the Norwich & Worcester RR. at Dayville Station. The bridge will be 99 ft. 6 in. long and 12 ft. wide.

LIVINGSTON, MONT.—J. F. Sohl of Livingston has the contract for building the bridge across the Shields River at \$1,660. There were 22 bids for the work, 12 of which were put in by Mr. Sohl, each being for different designs. The following were the other bids received: J. H. Eymann, \$1,618; F. S. Hornbeck (1), \$1,750; (2), \$1,710; J. F. Sohl, 12 bids ranging from \$1,660 down to \$1,340; Pueblo Bridge Co. (bid by telephone from Helena), \$1,380; J. W. Vreeland, Bozeman, Mont., \$1,645; Missouri Valley Bridge Co., steel, \$1,790; combination, \$1,500; O. E. Feppard, Missauld, Mont., steel, \$1,595; combination, \$1,295; Wm. S. Hewitt, not including grading or riprap, \$1,685. (June 30, p. 480.)

LOUISVILLE, KY.—The Board of Public Works will spend between \$8,000 and \$10,000 on finishing the bridge over Bear Grass Creek at Kentucky St.

MANSFIELD, O.—The Commissioners of Richmond County will build a new iron bridge over Rocky Run on Shelby Road which is estimated to cost \$2,000.

MARIETTA, O.—The \$70,000 of bonds for a bridge over the Muskingum River at Putnam St. have been sold. Address W. A. Patterson, Marietta. (June 16, p. 437.)

MERIDIAN, MISS.—Bids are asked until Aug. 7 by B. V. White, Clerk of the County Board of Supervisors, for a bridge over Brown's Creek on Causeyville Road.

MILWAUKEE, WIS.—The Grand Ave. viaduct has been condemned. The Milwaukee County Board is considering plans to rebuild it. F. C. Chas. Voigt, Wauwatosa, Road Commissioner.

MONTESANO, WASH.—Wm. Wade and C. V. Minkler have petitioned the Commissioners of Chelan County for a bridge across Chehalis River at this place. J. A. Sells, County Auditor.

MONTGOMERY, ALA.—The Tallapoosa Bridge Co. has been incorporated, with a capital of \$15,000, to build a bridge across the Tallapoosa River connecting Elmore and Montgomery counties.

MOSCOW, IDA.—The Commissioners of Latah County will soon let a contract for building a 66-ft. span bridge across the Potlatch River, about four miles northwest of Kendrick.

NEW BRUNSWICK, N. J.—Sealed bids are wanted by the Board of Chosen Freeholders of Middlesex County Aug. 2 for a new iron drawbridge over a creek at Morgan Station. Address County Engineer R. J. Dougherty, 423 George St., New Brunswick.

NEWMAN, GA.—The Atlanta & West Point RR., according to report, will build a new bridge south of this place.

NORFOLK, VA.—The repairs to the Ghent bridge will probably cost \$6,150. It is authorized by the Council. The Norfolk St. RR. Co. uses the structure. W. T. Brooke, City Engineer. (Jan. 20, p. 50.)

NORMAL, ILL.—The Illinois Central is about to build a new bridge to carry the Chicago branch track across Linden St. south of Normal. The bridge will be of iron with two stone or concrete pillars. Plans have been submitted to the Council.

OLD TOWN, MD.—Plans have been prepared for the proposed bridge over the Potomac River, and for the Wiley's Ford bridge by County Surveyor Douglas P. LeFevre. (June 2, p. 392.)

ORVILLE, CAL.—It is proposed to replace the old Orville bridge with a new structure of two spans, with a center stone pier, to cost \$3,900. The span is to be either a combination or steel Pratt truss; the combination will cost about \$3,640, and the steel truss is estimated to cost \$6,370. H. D. Lausen, Clerk of Butte County. George Miller made the estimates.

PETERSBURG, VA.—Messrs. Holworth, Butterworth & Co. have the contract for the iron bridges for the Richmond, Petersburg & Carolina RR. between Petersburg and Richmond. McDonald & Co. have the contract for the bridges south of Petersburg. (June 2, p. 392.)

PHILADELPHIA, PA.—The Philadelphia & Reading will have a trestle built to a coal yard at Thirtieth and Callowhill Sts. Ryan & Kelley are preparing estimates.

PHILO, ILL.—A new iron bridge with a 26-ft. span will be built near Deers on the line between Philo and Sidney Townships. Thomas B. Kyle, County Treasurer, Champaign County, Urbana.

PITTSBURGH, PA.—Reports state that plans are being made by the Pennsylvania Co. for improvements on the Western Division to cost about \$300,000, which include some bridge work. Thomas Rodd, Chief Engineer.

PITTSBURGH, PA.—The Wilkesbarre & Wyoming Valley Traction Co. does not contemplate building a bridge across the Susquehanna River at Pittston, as stated in this column July 21 (p. 528).

PLYMOUTH, PA.—In the Council July 18 it was decided to ask bids for two bridges.

PORT ANGELES, WASH.—A petition has been granted by the Commissioners of Callam County for a bridge across the Pysht River.

QUIGLEY, IA.—Reports state that a new iron bridge will be built over Deep Creek near this place. (Clinton County.)

QUINCY, CAL.—Bids are wanted Sept. 5 for a suspension bridge across the north fork of Feather River, near Beatty's, as mentioned in this column last week (p. 524). H. C. Flourney, Clerk Plumas County.

REDDING, CAL.—The bridge which it is proposed to build across Spring Creek, for which the County Surveyor is now preparing plans, is estimated to cost \$12,000. A. J. Dryman, Clerk of Shasta County.

RICHMOND, ONT.—The following are the bids received for the iron superstructure of the bridge over the Greenwood River to be built by the county, 1½ miles from Richmond: Dominion Bridge Co., \$1,840; Imperial Bridge & Iron Works, \$1,235; Hamilton Bridge Co., \$1,700. The tenders for the approaches and piers were: Henry Smith, piers, \$1,729.75; approaches, \$1,384.50; E. E. Perreault and F. J. Whelan, piers, \$1,480; approaches, \$650; J. Bruce, piers, \$1,400; approaches, \$650.

ROSSLAND, B. C.—The contract for the bridge on Washington St., over the tracks of the Columbia & Western, was awarded to John Phillips by the County Commissioners, July 10. The bids received were: T. Beauchamp, for \$1,924.14; W. M. Robson, for \$1,817.45; H. J. Raymer, for \$1,485; John Dunlop, for \$1,374.32; J. J. McKinnon, for \$1,250.68; John Phillips, for \$1,180.35 (awarded).

SACRAMENTO, CAL.—County Surveyor J. C. Boyd has reported on the proposed new steel drawbridge over Georgiana Slough at Walnut Grove, which is to connect Andrus Island with the mainland. He estimates that it will be 200 ft. long, 18 ft. wide and cost \$11,885. (Jan. 6, p. 13.)

SAGINAW, MICH.—H. E. Terry, City Engineer, is preparing plans for the new Genesee Ave. bridge. It will be 72 ft. wide, with 48 ft. roadway. The Council has appropriated \$200,000 for the work. (Jan. 20, p. 50.)

ST. CATHARINES, ONT.—Bids are wanted by Johnson Clench, County Clerk, for building a steel bridge over Sixteen Mile Creek.

ST. THOMAS, ONT.—James A. Bell, County Engineer, is preparing plans for a steel bridge to be built over the Catfish Creek at Orwell, and another bridge to replace a bridge near Mapleton.

SAN JOSE, CAL.—County Surveyor MacMillan is having plans prepared for four county bridges. One will be across the Los Gatos Creek at Campbell, to be a brick span of 50 ft., to cost about \$3,300. A similar span is proposed across the Adobe Creek between Mayfield and Mountain View on the San Francisco road. It will be a 20 ft. span. A new bridge at Hacienda will be a combination structure, with a span of 60 ft. across Allamitos Creek and cost about \$1,000. A combination bridge with a span of 60 ft. will be built on the San Felipe Valley road across Los Animas Creek.

The County Surveyor will prepare plans for a new bridge over Las Animas Creek in San Felipe Valley, and also for a culvert over Calabazas Creek on Prospect Road.

A petition has been filed for a new bridge across the Los Gatos Creek at Campbell Ave.

SEATTLE, WASH.—Messrs. Savage & Scofield of Olympia were awarded a contract July 13, to build a new bridge across the Yakima River, for \$3,783.

SIGOURNEY, IA.—Keokuk County has granted permission for building several new bridges. Address R. S. Wheeler, County Auditor.

SPALDING, IDA.—The Oregon Railroad & Navigation Co. will build a \$200,000 bridge over the Clearwater River on a proposed extension.

SULLIVAN, IND.—Bids are wanted by the Sullivan County Commissioners Aug. 7 for building substructure and superstructure for five small bridges, two of 60 ft., one of 50 ft., one 36 ft. and one 30 ft. long. J. R. Riggs, County Auditor.

TERRE HAUTE, IND.—Bids are wanted Aug. 10 for building a steel viaduct over a part of the Wabash River on the National Road to West Terre Haute. T. W. Adams, Chairman of the Board of Vigo County Commissioners.

UKIAH, CAL.—R. E. Donohoe, E. Bishop and John Clark are appointed a committee to view a site for a new bridge across Gafela River for Mendocino County.

VERNON, TEX.—The north span of the iron bridge over the Pease River, one mile north of this town, was washed away during the night of July 19. A contract will soon be let for a new span and to repair the stone piers and to build another span which was also damaged.

WINSTON-SALEM, N. C.—The two bridges which it is proposed to build across the Dan River are estimated to cost about \$8,000. Contracts will soon be let by the Commissioners of Stokes County.

WILLIAMSPORT, PA.—The Groton Bridge Co. has the contract for the county bridge in Pine Township at \$2,385. The Plunkett's Creek bridge was awarded to the Penn Bridge Co. for \$1,315, and the Armstrong Township bridge to the Massillon Bridge Co. for \$899.

ZANESVILLE, O.—The Y bridge across the Muskingum River has been condemned and it is expected a new steel structure will replace it.

Other Structures.

ALBERT LEA, MINN.—Bids are wanted Aug. 1 for building the \$300,000 hotel building for the Albert Lea Hotel Co. F. W. Kinney, Architect, Boston, Minn.

ATLANTA, GA.—An annex to the Fulton County court house will be built. Plans will be submitted Aug. 2. Estimated cost, \$100,000. Anton L. Kontz, Clerk, Fulton County.

BALTIMORE, MD.—The United Railways & Electric Co. is about to build new car barns, power house, machine shops, blacksmith shops, etc., for which Baldwin & Pennington prepared the plans. The buildings will be located in the southwestern part of the city.

The Guardian Trust & Deposit Co. will build a new office building at the corner of Calvert and German

Sts., estimated to cost about \$300,000. Baldwin & Pennington, architects. The interior will be of structure steel and the floors of cement. The building will be 48 ft. x 153 ft.

The contract for the warehouse to be built by the Pennsylvania RR. at Bond and Thomas Sts. is awarded to George Roydhouse of Philadelphia. (July 14, p. 513.)

CAMBRIDGE, MASS.—The car stables of the Boston Elevated Ry. on River St., four buildings, two storehouses and other small buildings, were destroyed by fire July 21.

CHARLESTON, S. C.—The Southern Ry. will build three warehouses, one to have a floor space of 27,500 sq. ft., another 16,500 sq. ft., and a third 36,000 sq. ft. Frank S. Gannon, General Manager, Washington, D. C.

CHICAGO, ILL.—The Chicago, Rock Island & Pacific is building a new suburban passenger station at Seventy-second St. It will be 25x70 ft., built of pressed brick and stone, with slate roof and be two stories high. It will have offices and waiting rooms and will be finished in hard wood, heated by steam and cost \$10,000. Frost & Granger of Chicago are the architects.

Contract has been let to W. A. & F. A. Wells by P. H. Rice for a new malting plant at Cragin, near Chicago, to be built on Cortland St. near the Chicago & North-Western and Chicago, Milwaukee & St. Paul tracks. The buildings will cost \$250,000 exclusive of machinery. The malthouse will be of brick 100x181 ft. and 6 stories high. There will also be a grain elevator 88 ft. high. Holabird & Roche, of Chicago, are the Architects.

CLEVELAND, O.—A new building will be built for the College of Physicians and Surgeons at the corner of Brownell St. and Central Ave., estimated to cost \$25,000.

COLUMBUS, O.—The Kilbourne & Jacobs Manufacturing Co., reports state, will put up a large car shop late in the fall or early in the spring. The company recently bought additional land adjoining the present plant.

DES MOINES, IA.—Work has been begun on the buildings of the Des Moines Bridge & Iron Works, and will be pushed to completion as rapidly as possible. This company was recently organized by E. W. Crellin, the engineer, for the manufacture of all kinds of bridge and structural steel. The company has leased a tract of land in the city 400 x 132 ft., and the greater portion of the ground will be covered with the buildings of the new plant. The main building will be 100 x 94 ft., and will be of brick and steel construction and absolutely fire proof. It is the intention to make the plant one of the most complete in the West. The company will manufacture bridge material and also build bridges.

DUNKIRK, N. Y.—C. H. Fleisher, reports state, will build a \$20,000 soap factory at Dunkirk, the machinery to be of his own invention.

GRAND RAPIDS, MICH.—The Grand Rapids & Indiana Ry. will probably build a new station at Grand Rapids within the next year. The matter is not definitely decided upon.

GREENSBORO, N. C.—Reports state that the Van Deventer Carpet Co. of Plainfield, N. J., will build a factory in Greensboro, also a steam power plant and an electric lighting plant. Henry L. Hohlfeld, General Manager.

HARVEY, ILL.—The Standard Boiler Co. of Goshen, Ind., will move its plant to Harvey, Ill. A building to cost not less than \$5,000 will be built at once and the plant will be in operation Sept. 1.

The Bliss & Laughlin Co. of Harvey has bought additional land and will extend its plant.

HAVANA, CUBA.—Reports state that plans are in consideration for building docks and warehouses in Havana to cost \$1,000,000. Five piers are provided for.

KANSAS CITY, MO.—The Emery-Bird-Taylor Dry Goods Co., reports state, will build a new warehouse 100x115 ft., to cost \$25,000.

LA SALLE, ILL.—Reports state that the Carl Pressing Cement Co. will build a new factory, the building to be of steel framework and cost \$300,000.

LEBANON, PA.—Reports state that the Lebanon Iron Co. has recently bought a 90-acre tract on which it will build a new steel mill.

LOCK HAVEN, ILL.—The Illinois Central, reports state, will build a new passenger station here.

MILWAUKEE, WIS.—A new armory will be built in this city, reports state. Two sites are in consideration by Secretary T. J. Sullivan of the Citizens' Business League.

NEW YORK, N. Y.—Plans have been filed with the Department of Buildings for the eight-story brick and stone office building at No. 3 Park Row, 25x62 ft., by the Park Row Construction Co. R. H. Robertson is the architect and the building will cost \$60,000.

Plans are being prepared for a new office building to be built at Broad, New and Wall Sts. by the New York Stock Exchange Building Co., of which Donald Mackay is President. Among those competing are Architects Bruce Price, George Kramer Thompson and George B. Post.

OELWEIN, IA.—Contracts have been awarded by the Chicago Great Western to James T. Brady, of St. Paul, for the erection of buildings valued at \$90,000, along the St. Paul and Kansas divisions. The principal addition will be a 16-stall addition to the roundhouse at Oelwein, Ia., and some smaller buildings at the same point for the machine shops. An eight-stall addition to the roundhouse in Des Moines, Ia., and a new eight-stall roundhouse in St. Joseph will also be built. The tracks of this company in Des Moines will also be repaired.

PEORIA, ILL.—A new central union passenger station is being built at Peoria by the Terminal Association. The arched roof is of steel and it will be lighted with arc lights.

PHILADELPHIA, PA.—Lewis Havens has the contract for building the eight-story brick and steel printing house, 80x140 ft., at 420 Cherry St., for the Curtis Publishing Co. It will cost \$125,000. Peabody & Stearns, architects.

Architect Albert Everhart has prepared plans for an addition to the storage warehouse of Wm. Schmidt & Sons. It will be four stories high, of brick or iron, and cost \$500,000.

PITTSBURGH, PA.—The Iron City Metal Co., recently chartered, with a capital of \$15,000, to manufacture all kinds of sheet metal designs, will build a plant in South Twenty-fifth St., South Side, and be ready for business in the fall. J. C. Graft and C. L. Atwood are two of the incorporators.

Wm. J. Early & Sons, South Side, will build a new building. New machinery will also be needed.

TOKIO, JAPAN.—Reports state that Tokumo Katsuyama, an architect from Tokio, will have headquarters in the Auditorium Annex, Chicago, Ill., for several weeks. He is in this country to make arrangements for the structural steel to be used in the new palace, which will be two stories in height, with 400 ft. frontage and 300 ft. depth. The material on which bids will soon be wanted is estimated to cost \$2,000,000.

TOLEDO, O.—The Cincinnati, Hamilton & Dayton grain elevator at East Toledo, was destroyed by fire July 23, and it is said the loss on the building and contents will be nearly \$1,000,000. The building carried about \$185,000 insurance, but it is uncertain just how much insurance was carried on the grain, which was on consignment. The elevator had a capacity of 1,000,000 bu. and about 900,000 bu. of wheat were in it when the fire occurred. The fire was thought to be due to spontaneous combustion. Two heavy explosions took place as the fire started.

TRENTON, N. J.—The Common Council has passed a resolution appropriating \$125,000 for building and equipping a new high school.

WILMINGTON, DEL.—Work will soon be begun on the new building for the Diamond State Steel Co.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Erie & Western Transportation.—Semi-annual, 2½ per cent., payable July 31.
Boston & Maine.—Semi-annual, preferred, 3 per cent., payable Sept. 1.
Cincinnati, Newport & Covington.—Semi-annual, ½ per cent., payable Aug. 1.
Illinois Central.—Semi-annual, 2½ per cent., payable Sept. 1.
Northern Pacific.—Quarterly, preferred, 1 per cent., payable Sept. 1; common, 1 per cent., payable Aug. 3.
Pullman's Palace Car Co.—Quarterly, \$1.50 per share, payable Aug. 15.
Burlington, Cedar Rapids & Northern.—Two per cent., with 2 per cent. extra, payable Aug. 1.
Canada Southern.—One per cent., payable Aug. 1.
Chicago Great Western.—Semi-annual preferred A, 2 per cent., payable July 31.
Chicago, Rock Island & Pacific.—Quarterly, 1¼ per cent., payable Aug. 1.
Chicago, St. Paul, Minneapolis & Omaha.—Semi-annual preferred 3½ per cent., payable Aug. 21.
Cincinnati, Portsmouth & Virginia.—Preferred 2 per cent., payable Aug. 1.
Des Moines & Ft. Dodge.—Annual, preferred, 7 per cent., payable Aug. 1.
Great Northern.—Quarterly, preferred, 1¼ per cent., payable Aug. 1.
Rio Grande Western.—Preferred, \$1.25 per share, payable Aug. 1.
St. Joseph & Grand Island.—First preferred, 1 per cent., payable Aug. 1.

Meetings and conventions of railroad associations and technical societies will be held as follows:

American Association of General Passenger and Ticket Agents.—The annual convention will be held at Boston, Mass., Oct. 17.

American Society of Civil Engineers.—Meets at the house of the Society, 220 West Fifty-seventh street, New York, on the first and third Wednesdays in each month, at 8 p. m.

American Society of Railway Superintendents.—The annual convention will be held at Detroit, Mich., beginning Sept. 20. C. A. Hammond, Secretary, Asbury Park, N. J.

American Street Railway Association and Street Railway Accountants' Association of America.—The annual convention is set for Oct. 17, at Chicago, Ill. T. C. Pennington, Secretary, 2020 State St., Chicago.

Association of Engineers of Virginia.—Holds its formal meetings on the third Wednesday of each month from September to May, inclusive, at 710 Terry Building, Roanoke, at 5 p. m.

Association of Railway Superintendents of Bridges & Buildings.—The annual convention will be held Oct. 17, in Detroit, Mich. S. F. Patterson, Secretary, Concord, N. H.

Boston Society of Civil Engineers.—Meets at 715 Tremont Temple, Boston, on the third Wednesday in each month at 7.30 p. m.

Canadian Roadmasters' Association.—The annual convention will be held at Toronto, Sept. 20. J. Drinkwater, Secretary, Winchester, Ont.

Canadian Society of Civil Engineers.—Meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday at 8 p. m.

Central Railway Club.—Meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March, May, September and November, at 2 p. m.

Chicago Electrical Association.—Meets at Room 1737, Monadnock Building, Chicago, on the first and third Fridays of each month at 8 p. m. J. R. Cravath, Secretary.

Civil Engineers' Club of Cleveland.—Meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

Civil Engineers' Society of St. Paul.—Meets on the first Monday of each month except June, July, August and September.

Denver Society of Civil Engineers.—Meets at 3 Jacobson Block, Denver, Col., on the second Tuesday of each month, except during July and August.

Eastern Maintenance of Way Association.—The annual convention will be held Sept. 26 to 29 at Portland, Me. F. C. Stowell, Ware, Mass., Secretary.
Engineers' Club of Cincinnati.—Meets at the rooms of the Literary Club, 25 East Eighth street, on the third Tuesday of each month, excepting July and August, at 6.30 p. m.

Engineers' Club of Columbus, (O.)—Meets at 12½ North High street on the first and third Saturdays from September to June.

Engineers' Club of Minneapolis.—Meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

Engineers' Club of St. Louis.—Meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

Engineers' Society of Western New York.—Holds regular meetings on the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

Engineers' Society of Western Pennsylvania.—Meets at 410 Penn avenue, Pittsburgh, Pa., on the third Tuesday in each month, at 7.30 p. m.

Locomotive Foremen's Club.—Meets every second Tuesday in the club room of the Correspondence School of Locomotive Engineers and Firemen, 335 Dearborn street, Chicago.

Master Car & Locomotive Painters' Association.—The annual convention will be held Sept. 12 at Philadelphia, Pa. Robert McKeon, Secretary, Kent, O.

Montana Society of Civil Engineers.—Meets at Helena, Mont., on the third Saturday in each month at 7.30 p. m.

New England Railroad Club.—Meets at Pierce Hall, Copley Square, Boston, Mass., on the second Tuesday of each month.

New York Railroad Club.—Meets at 12 West Thirty-first street, New York City, on the third Thursday in each month at 8 p. m., excepting June, July and August.

Northwest Railway Club.—Meets on the first Tuesday after the second Monday in each month at 8 p. m., the place of meeting alternating between the West Hotel, Minneapolis, and the Ryan Hotel, St. Paul.

Northwestern Track and Bridge Association.—Meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

Roadmasters' Association of America.—The annual convention will be held in Detroit, Mich., Sept. 12. J. B. Dickson, Secretary, Sterling Ill.

St. Louis Railway Club.—Holds its regular meeting on the second Friday of each month at 3 p. m.

Southern and Southwestern Railway Club.—Meets at the Kimball House, Atlanta, Ga., on the second Thursday in January, April, August and November.

Technical Society of the Pacific Coast.—Meets at its rooms in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

Traveling Engineers' Association.—The annual convention will be held in Cincinnati, O., Sept. 12. W. O. Thompson, Secretary, Elkhart, Ind.

Western Foundrymen's Association.—Meets in the Great Northern Hotel, Chicago, on the third Wednesday of each month. A. Sorge, Jr., 1533 Marquette Building, Chicago, is Secretary.

Central Association of Railroad Officers.

This association has elected the following officers: President, C. E. Carson, Kansas City, Mo.; first Vice-President, F. L. Tompkins, Peoria, Ill.; second Vice-President, George W. Bender, Indianapolis, Ind.; Secretary, O. G. Fetter, Cincinnati. Two papers read at the July meeting are reported in another column of this paper.

Iron and Steel Institute.

The autumn meeting of the Iron and Steel Institute (British) will be held in Manchester August 15th to 18th. The members will be received in the morning of August 15 by the Lord Mayor of Manchester and in the afternoon will make excursions to the L. & Y. locomotive works at Horwich or to various coke ovens. In the evening there will be a reception by the Lord Mayor and Lady Mayoress. On Wednesday there will be reading and discussion of papers and an excursion through the Manchester Ship Canal and its terminal works at Manchester. On Thursday there will be excursions to various interesting industrial works and several social entertainments. Friday there will be a visit to Chatsworth for luncheon with the Duke of Devonshire or an alternative excursion to Crewe.

The following papers have been promised for reading:

On the Constitution of Steel.—By Professor E. D. Campbell (Ann Arbor, Michigan).

On Diffusion in Steel.—By F. W. Harbord, Assoc. R. S. M., and Thomas Tynnam (Cooper's Hill Engineering College).

On the Magnetic Concentration of Iron Ore.—By H. C. McNellie, Assoc. R. S. M. (London).

On India as a Center for Steel Manufacture.—By Major R. H. Mahon, R. A. (Cossipore).

On Pig Iron Structures and Their Value in Foundry Practice.—By J. W. Miller (London).

On Practical Microscopic Analysis for Use in the Steel Industries.—By C. H. Riddsdale, F. I. C. (Guisborough).

On the Relation Between the Structure of Steel and Its Thermal and Mechanical Treatment.—By Albert Sauveur (Boston, U. S. A.).

On the Present Position of the Solution Theory of Carburized Iron.—By A. Stansfield, D. Sc. (Royal School of Mines).

On the Iron Industry in the Territory of His Highness the Nizam.—By Shamsul Ulama Syed Ali Bilgrami, Assoc. R. S. M., B. A. LL. B., Secretary to H. H. the Nizam's Government Public Works Department, Railways and Mines.

On a New Casting Machine for Blast Furnaces.—By R. Hanbury Wainford (Stoke-upon-Trent).

On the Utilization of Powdered Iron Ore.—By Professor J. Wiborgh (Stockholm).

The Engineering and Maintenance of Way Association.

A meeting of the Board of Direction of the American Railway Engineering and Maintenance of Way Association was held in Chicago, July 14, with President Wallace in the chair. Messrs. Torrey, McGuigan, McFarlin, Dawley and Fritch were present. Sixty-two new charter members were elected, making the total membership of the Association now 230. The Chairmen of the 14 standing committees were announced as follows:

On Graduation.—J. B. Berry, Chief Engineer Union Pacific, Omaha, Neb.

On Ballasting.—R. Montfort, Chief Engineer Louisville & Nashville, Louisville, Ky.

On Ties.—J. Kruttschnitt, Vice-President and General Manager Southern Pacific Company, San Francisco, Cal.

On Rail.—R. W. Trimble, Principal Assistant Engineer Pennsylvania Lines, Pittsburgh, Pa.

On Track.—E. A. Hanly, Chief Engineer L. S. & M. S. Ry., Cleveland, O.

On Buildings.—W. G. Berg, Engineer Maintenance of Way Lehigh Valley R.R., South Bethlehem, Pa.

On Bridges and Trestles.—Onward Bates, Engineer Bridges and Buildings, C. M. & St. P. R.R., Chicago, Ill.

On Masonry.—W. S. Breckenridge, Chief Engineer C. & B. & Q. R.R., Chicago, Ill.

On Signs, Crossings, Fences and Cattle-Guards.—H. Fernstrom, Chief Engineer Chicago Great Western Railway, St. Paul, Minn.

On Signalling and Interlocking Plants.—H. D. Miles, Signal Engineer M. C. R.R., Detroit, Mich.
On Records, Accounts and Reports.—H. F. White, Chief Engineer B. C. R. & N. R.R., Cedar Rapids, Iowa.
On Uniform Rules, Organization, Etc.—Thos. Tait, Manager Eastern Lines, Canadian Pacific R.R., Montreal, Canada.
On Water Service.—W. E. Dauchey, Superintendent M. & C. C. R. L. & F. R.R., Topeka, Kan.
On Yards and Terminals.—A. W. Sullivan, General Superintendent Illinois Central, Chicago, Ill.

It will be observed that the committees include a remarkably fine lot of men and it is reasonable to suppose that their work will be of great value to the profession. Certainly the new Association starts out well.

Car Foremen's Association of Chicago.

A meeting of the Car Foremen's Association was held Thursday evening, July 13, at Room 1741 Monadnock Block, Chicago. During the meeting two cases were discussed that had caused disputes between connecting lines at Chicago.

The first case was that of a side door dropping off and falling across an adjacent track, where it was afterwards run over. The owners of the car claimed that the railroad was negligent in not having removed the door to a place of safety before it was run over. It was the sense of the meeting, however, that roads could not be expected to keep a sufficient number of men to enable them to have all doors taken care of which might fall off cars because of insecure fastenings, as was claimed should have been done in this case.

The second question concerned the liability for the side door of a refrigerator car which had been struck and broken, together with the door stile and door post. The cause of the damage was that the door swung open and was struck, because of its not being securely closed and fastened. After some discussion the meeting decided that the road should see that all side doors were securely closed and fastened before cars were accepted, and failure to do this should make it responsible in case a door was knocked off and damaged by becoming opened in any manner.

There was also a discussion as to the application of new M. C. B. couplers and knuckles complete where the repairs were caused by the breakage of the coupler body or of the knuckle only, it being understood that the couplers were applied of the same make as those removed. Some of the members claimed that the parts of such couplers not broken, if in good and serviceable condition should be replaced again with the new part applied, so that the car owner might not be charged with the entire new coupler. Other members claimed that it was not good policy to apply second hand parts in connection with new parts, and that a new coupler or knuckle complete should be applied in all cases. When put to a vote it was found that the majority of the members present were in favor of replacing the broken parts with a new coupler body or knuckle, as the case might be, providing that they were in good and serviceable condition. In case a make of coupler different from that broken was applied, it was understood that in preference new material should be used.

This Association meets regularly on the second Tuesday of each month at 8 P. M., at Room 1741, Monadnock Block, Chicago. The officers are as follows: President, T. R. Morris; Vice-President, W. E. Sharp; Treasurer, E. B. Smith, and Secretary, W. C. Cook. The Executive Committee consists of these officers and Messrs. T. R. Hunt, S. Shannon and W. Gehrke. The Advisory Committee is P. H. Peck, Chairman; F. W. Brazier, H. V. Kuhlman, J. C. Grieb, L. T. Canfield and R. Wharton.

PERSONAL

(For other personal mention see Elections and Appointments.)

—Mr. W. C. Pennock, Master Mechanic of the Pennsylvania Lines at Logansport, Ind., was drowned July 17, at Hudson Lake, near New Carlisle, Ind., while on a fishing trip. Mr. Pennock was born at Cardington, Ohio, in 1862, and coming of a family having considerable wealth he received an excellent technical education. In 1880 he entered the service of the Pennsylvania Lines as a fireman on the Ft. Wayne Division, and three years later was appointed Road Foreman of Engines on the Richmond Division, later holding similar positions on the Indianapolis and Cincinnati Divisions. In September, 1893, Mr. Pennock was made Master Mechanic of the Chicago Division, and continued in that capacity until his death; for several years he was also a director of the City National Bank of Logansport. He was a man of unusual reserve, a close student and fond of travel, having recently returned from his fourth European trip. The only near surviving relative is a married sister.

ELECTIONS AND APPOINTMENTS.

Allegheny Valley.—Charles B. Price, heretofore Superintendent of the River Division and Acting General Superintendent, has been appointed General Superintendent, succeeding David McCargo, resigned. M. A. Carmody, heretofore Trainmaster, has been appointed Superintendent of the River Division, succeeding Mr. Price. Effective July 24.

Atchison, Topeka & Santa Fe.—At a meeting of the stockholders of the San Francisco & San Joaquin Valley, whose property was recently transferred to the A. T. & S. F. (see RR. News Column), the following officers were elected: President, E. P. Ripley; Vice-President, A. H. Payson, and Secretary Alexander Mackie. The Directors were elected as follows: E. P. Ripley, Chicago, Ill.; Aldace F. Walker, E. N. Gibbs, Victor Morawetz and R. S. Hayes, New York; W. G. Nevin, Los Angeles; John D. Spreckles, Robert Watt, A. H. Payson, F. W. Van Sicklin and H. C. Bush, San Francisco, Cal.

Chicago Great Western.—David Van Alstine, heretofore Division Master Mechanic at St. Paul, Minn., has been appointed Master Mechanic, succeeding Tracy Lyon.

Colorado & Northwestern.—At the annual meeting of the stockholders held at Boulder, Colo., July 18, the following officers were elected: President, W. C. Culbertson; Vice-President, J. T. Blair and Secretary, Treasurer and General Manager, C. B. Culbertson. The Directors, including those above named, are T. R. Mann and S. B. Dick.

Delaware, Lackawanna & Western.—A. C. Salisbury, heretofore Division Superintendent at Utica, N. Y., has been appointed Superintendent of the Scranton

Division, succeeding G. Bogart, resigned. The jurisdiction of A. H. Schwarz, Superintendent of the Syracuse Division, is extended to include the Utica Division.

Duluth, South Shore & Atlantic.—C. E. Lytle, Superintendent, has been appointed General Superintendent.

Fitchburg.—C. M. Burt has been appointed General Passenger Agent. Present headquarters 143 Liberty St., New York, succeeding J. R. Watson, resigned. Effective Aug. 1.

Kansas City, Pittsburgh & Gulf.—This Company's lines are to be operated as two Divisions, to be known as the Northern and Southern Divisions. The Northern Division is to extend from Kansas City to the north switch of Mena yard, including branches, and the Southern Division from the north switch of Mena yard to Port Arthur, including branches. W. Coughlin has been appointed Superintendent of the Northern Division, in charge of Transportation, Maintenance of Way, Water Service and Bridges and Buildings, with headquarters at Pittsburgh, Kan. O. H. Crittenden has been appointed Superintendent of the Southern Division, in charge of Transportation, Maintenance of Way, Water Service and Bridges and Buildings, with headquarters at Texarkana, Tex. Effective July 25.

Lake Erie & Detroit River.—Thomas Marshall has been appointed Assistant General Freight and Passenger Agent and Keith R. Cameron has been appointed Trainmaster, with headquarters at Walkerville, Ont.

Lake Shore & Michigan Southern.—H. F. Ball has been appointed Mechanical Engineer. Effective July 15.

Mineral Range.—C. E. Lytle has been appointed General Superintendent. (See Duluth, South Shore & Atlantic.)

New York, New Haven & Hartford.—Jacob W. Miller, with headquarters at Pier 19, North River, N. Y., will until further notice have charge of all matters heretofore under the jurisdiction of the late S. A. Gardner, General Superintendent of the Marine District. Effective July 20.

Norfolk & Western.—Gurdon W. Merrill has been appointed Assistant to General Superintendent James C. Cassell, with headquarters at Roanoke, Va. Effective July 21.

Pacific Coast Co.—F. J. Lawless has been appointed General Auditor with headquarters at Seattle, Wash. Effective at once.

Philadelphia & Reading.—W. A. Garrett, heretofore Division Superintendent of the Wabash at Decatur, Ill., has been appointed Superintendent of the Philadelphia Division of the P. & R., a position recently created.

San Antonio & Brownsville.—The officers of this new company, referred to in the Construction column, are: President, H. M. Aubrey; Vice-President, J. S. McKinnon; Secretary, F. W. Cook, Jr.; General Manager, J. M. Nix. The main office is San Antonio, Tex.

Southeastern Mississippi Valley Association.—R. W. McCleary has been appointed Secretary.

Southern.—General Superintendent J. H. Barrett informs us that A. J. Frazer has not been transferred to the Atlanta Division. Of course it follows from this that no other changes have been made among the Division Superintendents.

Tennessee Coal, Iron & RR.—J. R. Vail has been appointed Auditor, succeeding H. D. Cooper, resigned.

Western Maryland.—S. M. Manifold, heretofore General Manager of the York Southern, has been appointed Division Superintendent of the W. M., with headquarters at Hanover, Pa. Effective Aug. 1.

Wisconsin, Michigan & Northern.—A. Fenwick has been appointed Master Mechanic, succeeding Geo. W. Taylor, resigned.

York Southern.—S. M. Manifold, General Manager, with headquarters at York, Pa., has resigned.

RAILROAD CONSTRUCTION, New Incorporations, Surveys, Etc.

ALABAMA ROADS.—Grading is begun for a short line from the Southern main line near Montevallo, to run north one mile to Dogwood to tap the export coal mines.

ARKANSAS & OKLAHOMA.—Nearly all the grading is completed on the extension from Gavett, Ark., northwest to Southwest City, 11½ miles. From 100 to 150 men are at work. The Ozark Construction Co. has the contract. (July 14, p. 514.) John M. Bayliss, of Cassville, Mo., is President. (Official.)

ARKANSAS NORTHERN.—Maps have been filed at Little Rock, Ark., for this proposed line from Little Rock, northwest 211 miles through the counties of Pulaski, Faulkner, Cleburne, Van Buren, Searcy, Marion and Boone, to the Missouri State line. The road is to be ultimately extended to Springfield, Mo. The company was incorporated about a year ago, with a capital stock of \$4,000,000. A tunnel 700 ft. long will be required on the county line between Pulaski and Faulkner.

BELLEFONTE CENTRAL.—Right of way has been secured for the extension of the Matterhorn branch, now building to the Graysdale ore banks. There are 40 men at work, and it is being built as rapidly as possible. (June 30, p. 482.)

BRITISH COLUMBIA ROADS.—Frank Higgins, of Victoria, B. C., has given notice that application will be made to the Canadian Parliament and to the Legislature of the Province of British Columbia at their next sessions for an act incorporating a company to build a railroad from Beechy Bay, or Pedder Bay, Vancouver Island, to a point at or near Langford Station, on the Esquimalt & Nanaimo RR., and also to maintain railroad ferry boats between the ports of Victoria, the harbor of Beechy Bay and Port Angeles, Wash. This is probably in connection with the ferry service of the Port Angeles Eastern. (See below.)

BURLINGTON, CEDAR RAPIDS & NORTHERN.—Grading is reported begun on the Dowes-Arm-

strong branch from Armstrong, Ia., west 18 miles to Estherville on the main line. E. H. Elzey, of Cedar Rapids, has the contract. The company expects to have trains running within 90 days. (July 21, p. 531.)

CANE BELT.—Grading was reported begun July 14 on the extension from Eagle Lake, Tex., northeast about 17 miles to Sealy on the Missouri, Kansas & Texas. (June 30, p. 482.)

CENTRAL NEW YORK & NORTHERN.—Permission has been asked of the New York State Railroad Commissioners for right of way for this proposed line from a point on the Central New York & Western, to run north 55 miles to Macedon, on the West Shore. Henry V. Pratt, of Wayland, N. Y., is among the incorporators. (April 28, p. 305.)

CHESAPEAKE & OHIO.—Contracts have been let for the Greenbrier extension from Whitcomb, W. Va., as far as Marlinton, up the Greenbrier River as follows: Shanahan, Serpell & Co. and Lane Bros., Louisville, Ky.; Douglas & Co., Baltimore, Md.; C. D. Laughlin & Co., Richmond, Va., and Luther Wright & Co., Richmond. (July 21, p. 531.)

CHESTERFIELD & LANCASTER.—The stockholders have taken active steps to begin the immediate building of this line from Cheraw, S. C., on the Seaboard Air Line, to run west about 60 miles via Chesterfield to Lancaster. The company was incorporated in January. Capt. J. D. Hardin received the contract for building, and he expects to begin work within 90 days. G. J. Redfearn, of Cheraw, is President. (Jan. 27, p. 72.)

CHICAGO & NORTHWESTERN.—The company has decided to extend the Belle Plaine-Muchakinock branch from the latter point south about 20 miles to Ottumwa, Ia., and the people of Ottumwa have decided to aid. Some time ago they voted to give aid to build a line north to Wright, a point near the terminal of the C. & N. W., and this aid has been transferred to the C. & N. W.

CHICAGO, ROCK ISLAND & PACIFIC.—The company, according to report, has decided to build the main line to Valley Junction, Ia., as soon as possible. Double track was built to West Liberty, the junction point of the Burlington, Cedar Rapids & Northern, this spring. Work has been begun west of West Liberty, and the intention is to extend it to Iowa City this fall, and then complete it to Altoona next year, from which there is already double track to Valley Junction.

This company, according to report, has decided to build two branches in Oklahoma. One will run from Enid east 51 miles to Tonkawa, and the other from Anadarko south 35 miles to Fort Sill.

CHICAGO, MILWAUKEE & ST. PAUL.—Surveys are reported completed for the proposed extension from St. Paul and Minneapolis north 160 miles to Duluth and Superior. It is stated that the line is to be completed within a year from next fall. Bids will be asked within 60 days. (May 26, p. 379.)

COLUMBUS, MARSHALL & NORTHEASTERN.—Contracts were let last week, according to report, for building this line from Marshall, Mich., north about 140 miles via Olivet, Kalamazoo, Vermontville and Alma to Bay City. Grading is to be begun in the near future. H. E. Hollon, of Marshall, Mich., is President. (March 17, p. 197.)

COOK, LAKE & M'HENRY COUNTIES.—Grading is reported in progress on this line from Nippersink Point, Ill., on Fox Lake, to run east to Libertyville on the Chicago, Milwaukee & St. Paul. About 250 men are at work on the eight miles between Hainesville and Nippersink. C. W. McCann, of Eau Claire, Wis., has a portion of the contract. Leslie Carter, of Chicago, is President. (June 2, p. 393.)

COUNTY BELT RAILWAY OF ST. LOUIS.—This company was incorporated in Missouri, July 19, with a capital stock of \$1,000,000, by residents of St. Louis, to build a belt line of 30 miles encircling the city.

DELAWARE, LACKAWANA & WESTERN.—An order has been placed, according to report, for 2,400 tons of 80-lb. rails for relaying on the Scranton and Buffalo divisions.

DETROIT & TOLEDO SHORE LINE.—Track-laying was begun last week, according to report, at Manhattan Junction, Mich., on this line, now building between Detroit and Toledo. There is about 18 miles of grade completed and locating surveys are made for the entire line. (July 21, p. 531.)

EAST & WEST.—R. E. Jack, Cashier of the County Bank of San Luis Obispo, Cal., is interested in a road of this name to run from Port Harford, Cal., on the Pacific coast, east to the San Joaquin Valley. The enterprise, however, has not yet been shaped into action.

GREAT NORTHERN.—President James J. Hill is reported from Tacoma, Wash., as favoring a belt line between that city and Portland, Ore., to be under the joint control of the Great Northern, the Northern Pacific and the Union Pacific.

GULF & MANITOBA.—This company was incorporated in Minnesota, July 18, with a capital stock of \$50,000, to build a railroad from a point on the Iowa State line south of the village of Jackson to run north through the counties of Jackson, Cottonwood, Brown, Redwood, Renville, Kandiyohi and Stearns, about 167 miles, to a point near Sauk Center. This company is the company already noted under the heading the Manitoba & Gulf (July 7, p. 499), which, according to report, proposes to build an extension of the Kansas City, Pittsburgh & Gulf north to Duluth, Minn. The incorporators are: Hans Grannernd, Beaver Falls, Minn.; Mason W. Spicer, Willmar, Minn.; J. K. Brown, Jackson, Minn.; E. E. Carpenter, Canton, S. D.; F. T. Campbell, Des Moines, Ia.; J. J. Bell, Des Moines, Ia., and J. A. Carpenter, Alvan, Ill.

HARRISBURG & SOUTHERN.—A. R. Longley, Chief Engineer, is in Chicago to make arrangements for surveying 60 miles of this line, which is projected from the Eldorado branch of the Illinois Central, near Eldorado, Ill., to run south to the Ohio River. E. H. Stewart, of Rochester, N. Y., has just been appointed Assistant Engineer. J. J. Parish, of Harrisburg, Ill., is interested. (March 10, p. 179.)

IOWA CENTRAL.—Condemnation proceedings for

right of way have been begun on the Marshalltown & Dakota line between Story City, Ia., and Gowrie, and the company proposes to have the road in operation by Oct. 1. Hamilton Browne, of Marshalltown, is President. (July 21, p. 531.)

KIOWA, CHICKASHA & FORT SMITH.—This company was incorporated in Kansas, July 13, with a capital stock of \$2,000,000, to build a railroad from Kiowa, Kan., south about 450 miles, from Chickasha, I. T., to Fort Smith, Ark. The incorporators are men connected with the Chicago, Rock Island & Pacific and the Atchison, Topeka & Santa Fe, and it is stated that the two companies are to operate the line jointly.

KNOXVILLE & BRISTOL.—J. S. Simmonds, of Knoxville, Tenn., a promoter of this line, is reported as saying that the road is to join with the Norfolk & Western in building on east to Atlanta, Ga. (May 26, p. 379.)

LEHIGH VALLEY.—The proposition to build a loop through Plainfield, N. J., from the main line near Picketon, southwest to South Plainfield, is being considered by the railroad officials, according to report. The Plainfield Advancement Association has recently had a conference with President Alfred Walter. (Jan. 27, p. 73.) Press reports state that a third track is to be built between Penn Haven and Mauch Chunk.

LOUISVILLE & NASHVILLE.—Additional tracks are being built at Middleboro, Ky., according to report, to double the present yard facilities.

MAINE CENTRAL.—This company, according to report, has taken up the plan of building a line to Dam No. 8, in Gardner, Me. Another company, the Cobbosseecontee, was incorporated last year to build this line. (Sept. 30, 1898, p. 713.)

MARYLAND ROADS.—A. B. Knabb & Co., Krug, Md., have completed the proposed two miles of track from Hoyes Run, Md., to Muddy Creek. The company will run a stage line south to Oakland, five miles. (June 30, p. 483.)

MIDLAND OF NOVA SCOTIA.—Press reports from Canada state that 45 miles of grade is completed on this line, from Windom, N. S., to Truro, 60 miles. It is expected that the entire line will be graded by Sept. 1. Wm. Strachan, Montreal, Que., is President. (May 19, p. 359.)

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Winston Bros. & Halverson have the contract for grading the branch from Rapid River, Mich., near Gladstone, to run northwest 30 miles into Alger County. The maximum grade is 35 ft., and the maximum curvature four degrees. There will be ordinary pile and trestle bridges. There are about 200 men and 20 teams now at work. (July 14, p. 515.) The road will tap an agricultural and hardwood timber country. (Official.)

MISSING LINK.—This company has been incorporated in Georgia to build a railroad from Chattanooga, Tenn., east about 150 miles across the north end of Georgia to Waihalla, S. C., connecting with the Southern.

MOBILE & OHIO.—The Mobile & Bay Shore extension, near Pritchards, Ala., southwest about 25 miles to Portersville, on the Gulf of Mexico, was to have been completed by July 21. (April 14, p. 271.)

MOBILE, JACKSON & KANSAS CITY.—Rails are now laid for 75 miles out from Mobile toward Jackson, Miss. This is 20 miles beyond Merrill, to which point rails were laid a year ago. (March 10, 1898, p. 180.)

MONTANA ROADS.—The Diamond R. Mining Co., of Neihert, Mont., is to build a small switch 400 or 500 ft. long, but may not do this before next spring. (July 14, p. 515.)

NORTH GEORGIA.—An amendment has been asked to the charter of this company in Georgia to build the line from Knoxville, Tenn., southeast to Port Royal, S. C., with a further extension to Columbus, O. J. L. Tribble, of Atlanta, Ga., is Secretary. P. K. McCully, President, is in the East at work on the financial part of the plan.

OMAHA, KANSAS CITY & EASTERN.—E. M. Collins, of Kirksville, Mo., has completed survey for the extension from Quincy, Ill., to Springfield, 112 miles. A branch is proposed from Liberty to Beardstown via Mt. Sterling. (July 14, p. 515.)

ONTARIO & RAINY RIVER.—Grading is under way on the first 20 miles of the eastern end of this line from Stanley, on the Port Arthur, Duluth & Western. The road is to run west to Fort Francis, 250 miles, and it is part of the transcontinental line of Mackenzie & Mann. The Provincial Government has granted a subsidy of \$4,000 per mile for 275 miles, and the Dominion Government 6,400 acres of land for the first 80 miles, and the company is asking for a similar grant for the remaining mileage. (June 16, p. 439.)

PACIFIC & IDAHO NORTHERN.—Track is laid for the first 12 miles, according to report, on this line, from Weiser, Ida., north 85 miles up the Weiser Valley. Lewis Hall, of Weiser, is Treasurer.

PANHANDLE & GULF.—This company was incorporated in Texas, July 15, by residents of Sweetwater, with a capital stock of \$1,000,000, to build a railroad from Sweetwater, on the Texas & Pacific, to run south 75 miles to San Angelo on the Atchison, Topeka & Santa Fe.

PITTSBURGH, JOHNSTOWN, EBENSBURG & EASTERN.—Track-laying is to be begun at once, according to report, between Ramey, Pa., and Janesville, and Dougherty and Falling Timber on the proposed line from Phillipsburg, Pa., west about 60 miles to Johnstown. (Sept. 23, 1898, p. 697.)

PEACE RIVER PHOSPHATE COMPANY.—T. L. & L. R. Marquis have a contract to build six miles of extension from Arcadia, Fla., north up Peace River. The line now runs from Liverpool, Fla., north, 22 miles to Arcadia.

PENNSYLVANIA.—The Crabtree branch in Westmoreland County, Pa., according to report, is to be extended north about five miles to New Alexander.

PENNSYLVANIA ROADS.—Three miles of grading is reported completed on the road of the Vinton

Lumber Co., from Vintondale on a branch of the Pennsylvania, to run north nine miles to Nicktown. (July 7, p. 500.)

The Trexler & Turrell Lumber Co., of Ricketts, Pa., is locating a lumber road from Ricketts to run northeast 12 miles to Kasson Park. The company already owns four miles of land southwest from Ricketts.

PORT ANGELES EASTERN.—Isaac C. Atkinson, Vice-President and General Manager at Port Angeles, Wash., has succeeded in placing in the East the \$2,000,000 in bonds necessary for completing this road and its terminals from Port Angeles southeast to Olympia. (May 26, p. 379.)

The committee appointed by the Council of Victoria, B. C., has recommended a car ferry connection between that city and Port Angeles, Wash., and that the Port Angeles Eastern be tendered a yearly subsidy for a period of 10 years for an amount equal to 5 per cent. per annum of the estimated cost, not exceeding \$350,000, of such ferry and steamboat service.

ST. LOUIS & BELLEVILLE.—This company was incorporated in Illinois July 15, with a capital stock of \$1,500,000, to build a steam railroad from East St. Louis southeast about 20 miles, through French Village, Collinsville and other suburban towns to Belleville. Grading is to be begun at once, according to report, and the road in operation before Sept. 1. The incorporators and first Board of Directors are: John A. Day, Edward Abend and G. R. Barrett, Belleville; Z. W. Tinker and J. Kubusch, St. Louis, Mo.

SAN ANTONIO & BROWNSVILLE.—The city of San Antonio, Tex., has been asked for a bonus of \$100,000 for this line, recently incorporated to build from San Antonio south about 275 miles to Brownsville. The officers are given under Elections and Appointments. (July 21, p. 531.)

SAN JUAN & PAGOSA SPRINGS.—This company has been incorporated in Colorado, with a capital stock of \$100,000, to build a railroad from Arboles, on the Denver & Rio Grande, to run northeast about 30 miles up the Pedria River and Neutria Creek to Pagosa Springs. E. M. Biggs, President, of the Rio Grande & Pagosa Springs, Edith, Col., is an incorporator.

SAN MARCOS & TECOLUTLA.—This company is building a line from San Marcos, State of Puebla, Mexico, at the junction of the Mexican and the Inter-oceanic railroads, to run northeast about 250 k. m. (155 miles), via Teziutlan to the port of Tecolutla on the Gulf of Mexico. There are about 1,000 men at work under L. L. Lamar, Contractor, and track is laid nearly to Teziutlan, 100 k. m. (62 miles). The company has a subsidy of \$4,000 per k. m. from the Federal Government, and \$1,000 per k. m. from the Puebla State Government. Should it desire, the company may continue the road west to the city of Puebla. Edgar Heymans is Traffic Superintendent, San Marcos.

SILVERTON, GLADSTONE & NORTHERLY.—This company has completed nine miles of its line from Silverton, Col., to Gladstone. The company was incorporated April 6, to build from Silverton north about 30 miles up Cement Creek via Gladstone to Lake City. The general office is to be Silverton. C. E. Bibber, of Malden, Mass., and W. Z. Kinney, of Silverton, are incorporators. (April 14, p. 272.)

SMITHFIELD & MASONTOWN.—This company was incorporated in Pennsylvania, July 18, with a capital stock of \$111,000, to build a railroad from Smithfield, on the Baltimore & Ohio, to run through Fayette County to Masontown, 11 miles.

SOUTHERN.—Track is laid for the entire length on the Sumter & Wateree line from Middletons, S. C., east 15½ miles to Sumter. (June 9, p. 418.)

SOUTHERN PACIFIC.—The extension of the Oxnard branch from Oxnard, Cal., east 34 miles to Chatsworth Park has been completed, according to report, within one mile of Somis, or 17 miles from Oxnard. Orders are received to extend it to Simi, seven miles beyond Somis. The Pacific Improvement Co., of San Francisco, are the general contractors. Grading is being done by Grant Bros., of Los Angeles. (July 7, p. 500.) The city of Madera, Cal., has granted right of way for a spur through that city to the land of the Italian-Swiss colony. (June 16, p. 439.)

SUWANNEE & SAN PEDRO.—This company has been incorporated in Florida, with a capital stock of \$50,000, to build a railroad about 15 miles long in Suwannee County, with a terminus on the Suwannee River. R. B. Daniel and E. C. Bixler, of Jacksonville, Fla., are incorporators. (May 12, p. 343.)

TENNESSEE ROADS.—Robert Gray, of Bristol, has completed surveys for the Empire Lumber & Mining Company's line from Fish Dam in Johnson County, to run through Shady Valley and across the Holston Mountains to the Holston Valley RR. (Dec. 16, 1898, p. 904.)

TIFTON, THOMASVILLE & GULF.—John Hightower, of Thomasville, Ga., one of the directors of this company, is reported as saying that the company began grading April 2, and the first rail was laid May 29. There are 3,500 ft. of trestle completed. Five hundred men are grading between Moultrie and Tifton, and the company expects to have trains running through to Thomasville, about 50 miles, southwest from Tifton by Feb. 1 next. (May 12, p. 343.)

UNION & GLENN SPRINGS.—An act incorporating this company in South Carolina was approved March 1. It proposes to build a railroad from Union on the Southern to run northwest about 15 miles to Glenn Springs. The capital stock is \$50,000. T. C. Duncan and A. H. Foster are among the incorporators.

UNION PACIFIC.—It is stated that this company has decided to double-track its line between Omaha, Neb., and Ogden, Utah, and that the first section will be built between Cheyenne, Wyo., and Laramie over Sherman Mountain, 56 miles.

VIRGINIA & SOUTHWESTERN.—Large sums of money are being spent in improving the tracks of the South Atlantic & Ohio and the Bristol, Elizabethton

& North Carolina lines, recently bought by this company.

WAYCROSS AIR LINE.—Preliminary surveys are reported in progress from Douglas, Ga., to Fitzgerald, on the proposed extension of this line. (June 30, p. 484.)

WESTERN MARYLAND.—An official writes that no changes are being made in the track between Greencastle road and the passenger station at Hagerstown, Md. (July 14, p. 516.)

WYOMING SOUTHERN.—Rhodes Bros., of Denver, Col., have taken the contract for grading this line from Fort Steele, Wyo., south 33 miles along the north fork of the Platte River to Saratoga, and thence to Grand Encampment and Battle Lake, in all 77 miles. It is to be completed to Saratoga by Oct. 15. H. A. Frambach, of Denver, Col., is President, and T. J. Milner, of Denver, Chief Engineer. (June 30, p. 484.)

GENERAL RAILROAD NEWS.

ATCHISON, TOPEKA & SANTA FE.—At the annual meeting of the stockholders of the San Francisco & San Joaquin Valley, held at San Francisco, July 18, a complete transfer of the property was made to the A., T. & S. F. The officers and directors are given under Elections and Appointments. (May 19, p. 361.)

BALTIMORE & OHIO SOUTHWESTERN.—Judge Thompson of the U. S. District Court at Cincinnati, on July 21 confirmed the foreclosure sale made at Cincinnati July 10, to a committee representing the bondholders. The condition is that the road should stand good for the settlement of all priorities and pending claims that may be adjudged against it hereafter by the courts. (July 14, p. 516.)

BOSTON & ALBANY.—A protection committee has been appointed as follows: Chas. S. Sargent, Wm. Minot, Chas. E. Cotting, Alfred D. Foster and T. Jefferson Coolidge, Jr., with Reginald Foster as counsel. A circular has been issued by protesting stockholders representing, it is claimed, between 35,000 and 40,000 shares, in which opposition is made to the proposed lease of the road to the New York Central & Hudson River on the ground of the inadequacy of the proposed rental. (July 14, p. 516.)

BOSTON & MAINE.—The directors of the Portland & Rochester, on July 21, approved the proposition for the exchange of its stock share for share with the B. & M., and the absorption into that company. The proposition of the P. & R. will be voted upon by the stockholders in October. (July 14, p. 516.)

CHESAPEAKE BEACH.—Judge Bradley of the District Superior Court, Washington, D. C., on July 25 denied the application of Ambrose C. Dunn for a receiver for this company and the Chesapeake Bay Construction Co. (July 14, p. 516.)

CHICAGO & ALTON.—The subscribers of record on July 20, are offered the privilege of subscribing pro rata for the \$40,000,000 new three per cent. bonds at the rate of \$650 in cash for each \$1,000 bond, in amounts equal to \$180 of new bonds for each share of stock held. Of the new issue \$25,000,000 will be used for improvements, betterments and extensions, and the remaining \$15,000,000 held with some trust company for refunding existing indebtedness. The first call for \$10,000,000 of the new bonds will be made about Oct. 10. (June 30, p. 484.)

CHICAGO, BURLINGTON & QUINCY.—The New England Trust Co. gives notice that 80 bonds for \$1,000 each, and 22 bonds for \$100 each, of the Denver extension four per cents., due Feb. 1, 1922, have been drawn for payment at par at the office of the Trust Co. in Boston on Aug. 1, interest to cease after that date.

COLORADO & SOUTHERN.—An arrangement has been concluded with the Atchison, Topeka & Santa Fe whereby this company is given right to run such trains as it may elect over the Atchison tracks between Pueblo and Denver, Colo.

ERIE.—The New York Stock Exchange has listed \$1,452,000 additional prior lien four per cent. bonds of 1896, bringing the total up to \$31,452,000; also \$1,027,000 additional general lien bonds of 1896, making a total to date of \$31,954,000. The prior lien bonds are to be used for improvement of terminal facilities, chiefly at Jersey City, and for additional equipment. The general lien bonds are for the purchase of 700 shares of stock of the Buffalo, New York & Erie, for the retirement of equipment trust obligations of the New York, Pennsylvania & Ohio, for buying \$390,000 bonds of the Buffalo, Bradford & Pittsburgh, \$125,000 bonds of the Tioga RR., and \$140,000 of the Lockport & Buffalo.

KENTUCKY & INDIANA BRIDGE.—A decree was entered in the U. S. District Court at Louisville, Ky., July 13, on mandate from the U. S. Court of Appeals, ordering the sale of this property. It will be offered as a whole and in two portions, one consisting of the railroad and its franchises, and the other of the bridge and its franchises. The upset price is \$700,000. (Nov. 18, 1898, p. 840.)

LEBANON SPRINGS.—Jarvis P. O'Brien, referee, has submitted his report on the claims against this company, showing claims for about \$255,000. (June 30, p. 484.)

LOUISVILLE & ATLANTIC.—This company has been incorporated in Pennsylvania, with a capital stock of \$2,000,000, as successor to the Richmond, Nicholasville, Irvine & Beattyville, sold May 2, to Adolph Segal of Philadelphia for \$291,000. The directors are: Robert Cochran, George MacLeod and David W. Farleigh, Louisville; G. W. Gourley, Beattyville; James B. McCorry, Richmond, Ky.; Chas. A. Furbish, Robert G. McDougal, Fred F. Drake and Robert W. Davis of Pennsylvania, and Chas. G. Mayhew. (May 5, p. 326.)

MANITOBA & NORTHWESTERN.—The Canadian Legislature on July 19 passed the second reading of the bill to ratify the agreement with this company whereby the Government takes over half a million acres of land in security for moneys advanced to the company. This land is to be sold only to actual settlers.

NORTHERN PACIFIC TERMINAL OF OREGON.—The Farmers' Loan & Trust Co., New York, as trustee, gives notice that 20 of the bonds have been

drawn for the sinking fund, to be paid at the Trust Company's office, New York, on Aug. 10, at 110 and accrued interest.

PITTSBURGH & WESTERN.—Judge Buffington in the U. S. Circuit Court at Pittsburgh, Pa., on July 15, authorized Receiver King to extend the time of payment of the \$400,000 receiver's certificates, due July 1, 1899, until July 20, with the option of paying any time between Jan. 1 and July 1, 1900. (July 21, p. 532.)

PITTSBURGH, PAINESVILLE & FAIRPORT.—The Mercantile Trust Co., New York, announces that it will accept deposits of first mortgage five per cent. bonds and terminal five per cent. bonds of this company, with authority to sell at par and interest in cash, or to deposit them under any plan of reorganization, at the option of the depositor, within 30 days after the announcement of the plan. This is in view of the necessity of certain expenditures for the improvement of the property, and for the probable early termination of the receivership and reorganization of the Pittsburgh & Western.

SEATTLE & SAN FRANCISCO.—Stahl & Straud, bankers of Philadelphia, offer \$700,000 first mortgage five per cent. 40-year gold bonds, of a total of \$1,500,000 new issue, at par and interest, with bonus of five shares of \$100 each full paid-up stock on each bond.

ST. JOSEPH & GRAND ISLAND.—An official report of the Special Master in the matter of distribution of the proceeds derived from the foreclosure sale of the property of the old company shows that each outstanding bond, with the coupons from May, 1894, is entitled to a payment of \$421.53, which is on deposit in the First National Bank of St. Paul, Minn. The receivers on July 6 advertised that they will pay at their office at Boston the sum of \$21.12 on each of the first mortgage bonds as the final dividend derived from the unmortgaged estate of the company.

WISCONSIN CENTRAL.—The new company took possession of the property on July 18. Holders of undeposited or unasserted bonds and stock of the old company are notified that deposits can no longer be received by the reorganization committee under the plan of April 10, and holders of these securities are referred to the new company for settlement. (July 21, p. 532.)

TRAFFIC.

Traffic Notes.

The Southwestern Freight Bureau has been superseded by the Southwestern Freight Committee, of which Mr. George W. Cale is the manager.

Mr. W. E. Halm, Commissioner of the Denver Freight Traffic Association, has resigned, and it is said that the Association will go on for a while without a commissioner. The Association is supported by 48 jobbing houses. Its Chairman is Mr. W. A. Hover.

The new State Railroad Commission of Arkansas has promulgated an elaborate code of regulations for assessment and collection of storage and demurrage charges on freight. This Commission has heard its first complaint of discrimination, and gave out its decision on July 13. A firm shipping cement from Little Rock to Arkadelphia found that another shipper had sent a similar lot of cement at a much less rate, the complainant paying 18 cents per 100 lbs. and the other firm eight cents. It appears that the offending firm manufactured lime, which was sent to Little Rock, there "stopped off" and then sent on to Arkadelphia at the through rate, with 1½ cents added for stopping off; and the shipment which was complained of had been billed as lime (which had been stopped off), instead of cement. The shipping clerk who described the goods as lime was unable to explain how he had made such a mistake. The shipper corrected the description as soon as he heard of the complaint, and the consignee then paid the full tariff rate. The majority of the three Commissioners decide that the evidence is not sufficient to warrant them in prosecuting the railroad for the recovery of the statutory penalty, though they say that they are not convinced that there was not an intention to discriminate in favor of the lime merchants. The third Commissioner filed a dissenting opinion.

Chicago Traffic Matters.

Chicago, July 26, 1899.

Local officers of the Vanderbilt lines are busy just now denying charges of passenger rate cutting from the middle west and northwest to Boston. A Boston mercantile house recently sent out a circular addressed to retail merchants in the territory named informing them that if they would come to Boston between August 1 and Sept. 1, to buy their fall and winter goods, they would be furnished return railroad tickets free of any charge. The prospective customers were told that in order to get advantage of the free return tickets they must purchase going tickets over the following roads, at full fare: New York Central, Pittsburgh & Lake Erie, Big Four, Lake Shore, New York, Chicago & St. Louis, Michigan Central and Chicago & Northwestern. Representatives of the Vanderbilt lines disclaimed any knowledge of any arrangement with the New England jobbers, but a committee was appointed to further investigate the charge.

Officers of the St. Paul-Chicago lines have a quarrel over rates for returning Klondikers from the north Pacific coast to the east. The Milwaukee & St. Paul has cut \$4 off the one-way basing rate from north Pacific coast common points to this city on the ground that such action was necessary to protect the company from the secret work of the Chicago Great Western. The latter of course denies the charge and a meeting of the general passenger agents of the Chicago-St. Paul lines is now in session trying to get at the facts.

The Rock Island has announced the same basing rate from the Missouri River as is in effect from St. Paul and makes the rate from Seattle to Chicago via the Missouri River \$47.50, instead of \$52.50.

An attempt is being made by the National Business Men's League to have a great meeting in Chicago Aug. 7 to discuss needed changes in and amendments to the interstate commerce law. It is the intention of the officers of this association to have the meeting, which will be in the form of a banquet, attended by representative business men, shippers, prominent railroad officers and members of the interstate commerce commission.